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OF

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BY-LAWS

OF THE

ENTOMOLOGICAL SOCIETY

OF LONDON,

ALTERED AND ADOPTED AT A SPECIAL MEETING
HELD ON THE 6TH NOVEMBER, 1848.

CHAP. I. *Object.*

THE ENTOMOLOGICAL SOCIETY OF LONDON is instituted for the improvement and diffusion of Entomological Science.

CHAP. II. *Constitution.*

The Society consists of British and Foreign Ordinary Members and Subscribers, the number of whom shall be unlimited; of Foreign Honorary Members, whose number shall not exceed ten; and of Foreign Corresponding Members, the number of whom shall be unlimited.

CHAP. III. *Management.*

The affairs of the Society shall be conducted by a Council, consisting of thirteen Members, to be chosen annually, four of whom shall not be re-eligible for the following year.

CHAP. IV. *Officers.*

The Officers of the Society shall consist of a President; three Vice-Presidents; a Treasurer, who may be a Vice-President; two Secretaries; and a Curator.

CHAP. V. *Annual Election of Officers.*

The President, Treasurer and Secretaries shall be elected annually out of the Council. The Vice-Presidents shall be nomi-

nated by the President, at the Meeting next after the Anniversary Meeting, from the Council. The President and two of the Vice-Presidents shall, however, not be eligible for re-election more than two years successively. The Curator shall be appointed by the Council.

Chap. VI. *President.*

The duty of the President shall be to preside at the Meetings of the Society and Council, and regulate all the discussions therein, and to execute, or see to the execution of the By-Laws and orders of the Society.

Chap. VII. *Vice-Presidents.*

1. It shall be the duty of a Vice-President, in case of the absence of the President, to fill his place, or of a Member of the Council then present in the absence of all the Vice-Presidents, who shall for the time being have all the authority, privilege, and power of President.

2. If no Member of the Council shall be present at any Ordinary Meeting, the Members present shall nominate and appoint to be Chairman such Member as they shall deem fit.

Chap. VIII. *Treasurer.*

1. It shall be the duty of the Treasurer to receive for the use of the Society all sums of money payable to the Society, and to disburse all sums payable by the Society out of the funds in his hands. He shall moreover furnish the Society with a true and particular account of all such receipts and disbursements twenty-one days previous to each Anniversary.

2. No payment exceeding £5, excepting for rent or taxes, shall be made by the Treasurer without the consent of the Council.

3. The Treasurer shall keep a book of Cheque Receipts for admission fees and annual payments; each receipt shall be signed by himself, the date of payment and name of Member or Subscriber paying being written both on the receipt and on the part of the cheque which is left in the book.

4. The Treasurer shall demand all arrears of annual payment, after such payment shall have been due three months.

5. The accounts of the Treasurer shall be audited annually previously to the Anniversary Meeting by a Committee of three Mem-

bers of Council, and three Members of the Society, to be appointed by the President, of which Committee three shall be a quorum.

Chap. IX. *Secretaries.*

1. It shall be the duty of the Secretaries to keep a list of all the Members of and Subscribers to the Society, stating their address, place of residence, &c.; to produce to the Council all correspondence in any way connected with the Society at the next Meeting after such correspondence shall have been received, or taken place; to edit the Transactions and Proceedings under the direction of the Council, and to take care that the Proceedings are published and ready for delivery to the Members and Subscribers at a Meeting of the Society within six months after the entry of such Proceedings in the Minute Book has been confirmed.

2. Minutes of the Proceedings of Monthly and Council Meetings shall be taken by one of the Secretaries; or, in their absence, by any Member whom the Chairman may appoint for the occasion.

3. The Minutes shall be fairly copied by one of the Secretaries into a Minute Book, and at the next Meeting read aloud for confirmation.

Chap. X. *Curator.*

1. It shall be the duty of the Curator to take care of the Library and Cabinets of the Society;* to display, arrange, and class the insects, &c. A Catalogue of the Library shall be made, and a Catalogue of the insects contained in the Museum shall be kept by him, containing the names of the donors and the times and places of their capture, as far as practicable.

2. All Members of and Subscribers to the Society shall have free access to the Cabinets, at the time specified in the By-Laws, for the purpose of examination and description, excepting that if a Member, Subscriber or Stranger present specimens of new insects to the Society with manuscript names attached, specifying his intention of publishing the same, then no individual, whether Member, Subscriber or Stranger, shall during the space of twelve months publish any description or figure of such specimen.

3. No Stranger shall be allowed to see the Library or Cabinets unless in company with a Member or Subscriber, but a note addressed

* The Curator is in attendence at the Rooms of the Society every Monday between the hours of Two and Seven o'clock, P.M., for the purpose of showing the Collections, &c. to Members and Subscribers.

to the Curator, Secretary or Member in attendance, shall be deemed a sufficient introduction, the Curator, Secretary or Member in attendance then acting as the introducing Member.

4. No Stranger shall be permitted to take away or to describe any insect, or to make a drawing of the same, except by special permission of the Council previously obtained.

5. A Book for Synonyms shall be kept by the Curator, and any Member making observations therein must sign his name to them.

Chap. XI. *Library Regulations.*

1. A Catalogue of the Library and MSS. shall be kept by the Curator, with the names of the Donors.

2. The Library and Cabinets shall be under the superintendence of a Committee, consisting of the President and four Members, who shall be elected by the Council at the first Meeting in February in every year, (three of whom shall be a quorum), and who shall render an Annual Report to the Council at the first Meeting in the following January.

3. No Member or Subscriber shall be allowed to borrow from the Library more than two volumes at one time, or keep in his possession the same longer than one week, without leave of the Curator.

4. If the Books are torn, injured, lost, or not forthcoming when demanded by the Curator, full compensation shall be made for the same by the borrower.

5. The Secretaries shall call in all books borrowed from the Library on the 5th day of January and 5th of July in every year; and in case the same be not returned on or before the General Meeting of the Society in the following month, notice thereof shall be given by the Curator to the Council, who shall then direct a second notice to be sent to the Member or Subscriber retaining such books, and in case the same be not returned within the further space of four weeks from the date of such second notice, so sent, such Member or Subscriber shall in future be disqualified from borrowing books from the Library without the special permission of the Council. A printed copy of the Library Regulations shall be pasted in every work or volume in the Library.

Chap. XII. *Election and Admission of Members and Subscribers.*

1. Every Candidate for admission into the Society shall be pro-

posed by three or more Members, who must sign a Certificate in recommendation of him.

2. One of the three must have personal knowledge of the Candidate.

3. The Certificate shall specify the name, rank, profession, qualifications and usual place of residence of the Candidate.

4. The Certificate for Member having been read at one of the Ordinary Meetings, shall be suspended in the Room, and the person therein recommended shall be balloted for at the second Ordinary Meeting after such reading.

5. The Certificate for Subscribers having been read at one of the Ordinary Meetings, shall be suspended in the Room, and the person therein recommended shall be balloted for at the next Ordinary Meeting after such reading.

6. The Elections of Ordinary Members shall be void unless the admission fee shall be paid within twelve months after the date of their Election; the Council shall, however, possess a discretionary power to extend the time of payment.

7. The method of voting for the election of Members and Subscribers is by Ballot, and two-thirds of the Members balloting shall elect.

Chap. XIII. *Admission Fee.*

1. The Admission Fee for Members shall be £2 : 2*s.*, the Annual Contribution £1 : 1*s.*; and the composition in lieu of the Annual Contribution £10 : 10*s.*

2. The Annual Contribution for Subscribers is £1 : 1*s.*, without Admission Fee.

3. The Annual Contribution shall become due on the first day of January in every year in advance; but any Member or Subscriber elected after the 30th of September will not be called upon for his subscription for the remaining portion of that year.

Chap. XIV. *Withdrawing and Removal of Members and Subscribers.*

1. Every Member or Subscriber having paid all fees due to the Society shall be at liberty to withdraw therefrom upon giving notice in writing to the Secretary.

2. Whenever written notice of a Motion shall be delivered to the Secretary for removing any Member or Subscriber, signed by the Chairman for the time being on the part of the Council or by five

or more Members, such notice shall be read from the chair at the two Ordinary General Meetings immediately following the delivery thereof, and the next following Ordinary Meeting shall be made a Special General Meeting and the Members summoned accordingly, when such Motion shall be taken into consideration and decided by ballot, whereat if a majority of the Members balloting shall vote that such Member or Subscriber be removed, he shall be removed from the Society.

3. Whenever any Ordinary Member of the Society shall be in arrear for five years in the payment of his Annual Contribution, notice thereof in writing shall be given or sent to him, together with a copy of this section; and in case the same shall still remain unpaid, the Treasurer shall give notice thereof to the Council, who shall cause the name of such Member to be read at the three following Ordinary Meetings of the Society, together with a statement of the sum due by him for arrears; and at the fourth Ordinary Meeting the removal of such Member of the Society shall be decided by method of ballot, in like manner as is specified in the second section of this chapter.

4. Whenever the Annual Contribution of a Subscriber shall be in arrear one year, such Subscriber shall have his name erased from the List of Subscribers and cease to belong to the Society.

Chap. XV. *Privileges of Members and Subscribers.*

1. The Members have the right to be present, to state their opinion and to vote at all Meetings; to propose Candidates for admission into the Society; to introduce Visitors at General Meetings of the Society, and to introduce scientific Strangers to the Library and Museum; to purchase the Transactions of the Society at reduced prices, and to have personal access to the Library and Museum.

2. No Member to introduce more than one Visitor.

3. Ordinary Members of the Society resident more than fifteen miles from London shall be entitled to receive the Transactions gratuitously when their Annual Contribution has been paid.

4. All the Honorary and Ordinary Members are eligible to any office in the Society, provided the latter are not more than one year in arrear in the payment of the Annual Subscription.

5. No Member shall be entitled to vote on any occasion until he shall have paid his subscription for the year last past.

6. Subscribers enjoy all the privileges of Members excepting those

of voting at the meetings, holding office under the Society, and proposing Candidates.

7. Subscribers have no claim upon or interest in the property of the Society.

Chap. XVI. *Foreign Members.*

1. Every Foreigner who has distinguished himself as an Entomologist, or who has shown himself able and willing to promote the ends for which the Society is founded, may be elected a Foreign Member; his Annual Contribution shall be £1 : 1*s.*, and he shall be entitled to the same privileges as other Members.

2. Foreign Members shall not be required to sign the Obligation until present at a General Meeting of the Society, and when so present shall be admitted as other Members.

3. Foreign Members shall be exempt from the payment of any Admission Fee.

4. Foreigners and Residents abroad may be elected as *Corresponding Members*, who shall not be subject to the payment of any Annual Contribution, and who shall be entitled to a copy of the Journal of Proceedings of the Society, but not to the Transactions; which, however, may be purchased by them at the reduced price paid by the ordinary Resident Members. The privileges of Corresponding Members shall however cease in case they shall at any future time be residents in the United Kingdom for the space of twelve months, unless sanctioned, in the case of any particular Member, by a special vote of the Council.

Chap. XVII. *Honorary Members.*

1. Every person proposed as an Honorary Member shall be recommended by the Council, and be balloted for, and elected, and be liable to be removed in the like form and manner, and be subject to the same rules and restrictions, as an Ordinary Member.

2. Honorary Members shall be exempted from the payment of Fees and Contributions; and shall possess all the privileges of Ordinary Members.

3. No resident in Great Britain can be an Honorary Member, except the Honorary President, the Rev. William Kirby, A.M. F.R.S. &c., and William Spence, Esq., F.R.S.

Chap. XVIII. *Meetings of the Society.*

1. The Ordinary General Meetings of the Society shall be held

on the first Monday in every month in the year, beginning at eight o'clock precisely in the evening, or at such other time as the Council shall direct.

2. At the Ordinary Meetings the order of business shall be as follows.

3. The names of the Visitors allowed to be present at the Meeting shall be read aloud by the Chairman.

4. The Minutes of the last Meeting shall be read aloud by the Secretary, and proposed for confirmation by the Meeting, and signed by the Chairman.

5. The Presents made to the Society since their last Meeting shall be announced and exhibited.

6. Certificates in favour of Candidates for admission into the Society shall be read or submitted to ballot.

7. Members and Subscribers shall sign their names in the Obligation Book, and be admitted.

8. The President shall have a discretionary power as to the Papers to be read at the Meetings of the Society; and the Secretary, assisted by the President and any Member or Members of the Council, shall determine as to the priority in which such papers shall be read, and propriety of omitting any portion of the same.

9. All Memoirs which shall be read at any General Meeting of the Society shall become the property of the Society, unless otherwise stipulated for previous to the perusal thereof.

10. Entomological communications shall be announced and read either by the Author or the Secretary. When the other business has been completed, the persons present shall be invited by the Chairman to make their observations on the communications which have been read, and on the specimens or drawings which have been exhibited at the Meeting.

11. No Motion relating to the government of the Society, its By-Laws, the management of its concerns, or the election, appointment or removal of its Officers, shall be made at any Ordinary Meeting.

Chap. XIX. *Special General Meeting.*

Upon the requisition of any six or more Members, presented to the President and Council, a Special General Meeting of the Society shall be convened, and any proposition to be submitted to such Meeting shall be stated at length in the Notice to Members.

Chap. XX. *Annual General Meeting.*

1. The Annual General Meeting of the Members shall be held in the Meeting-room on the fourth Monday in January of every year.

2. The objects of the Meeting shall be to choose the Council and Officers for the then ensuing year; and to receive from the Council, and hear read, their Annual Report on the general concerns of the Society.

3. The Council for the time being shall annually cause to be prepared two written Lists, one of which (No. 1 in the Schedule hereto) shall contain the names of four Members, whom they shall recommend to be removed from, and of four other Members to be elected into the Council; and the other List (No. 2) shall contain the names of such Members as they shall recommend to fill the offices of President, Treasurer and Secretaries, for the year ensuing; which Lists shall be read at the Monthly Meeting in January in every year, and shall then be fixed up in the Meeting-room until the day of election. And copies of such Lists shall be transmitted to every Member whose known residence shall be in London, or within twenty miles thereof, at least seven days before the Annual General Meeting shall take place.

4. On the day of voting, each Member present shall put his balloting Lists into the respective Glasses to be provided for such occasion; before doing which, however, in case any name or names shall have been added to the Lists proposed by the Council, he shall strike out the name or names of those persons recommended for whom he does not vote. And if more names shall be suffered to remain in any List than the number of persons to be elected or removed, such Lists shall be rejected. And in case the names suffered to remain shall be less than the number of vacancies to be supplied, those names only which shall remain in the List shall stand as voted for.

5. The President shall appoint two or more Scrutineers from the Members present, not being Members of the Council, to superintend the Ballots and report the results to the Meeting.

6. The Ballot for the Council shall remain open for one quarter of an hour, at the least; and the Ballot for the Officers for one quarter of an hour, at the least, after the result of the Ballot for the Council shall have been declared.

7. If from any cause an election shall not take place of persons

to fill the Council, or any of the offices aforesaid, then the election of the Council and Officers, or the election of Officers, as the case may be, shall be adjourned until the next convenient day, of which notice shall be given, in like manner as is directed for the Annual General Meeting.

8. No Ballot, either for the election of Members or any other business, shall be taken unless nine Members are present.

Chap. XXI. *Transactions.*

1. The Transactions shall consist of Papers communicated to the Meetings of the Society.

2. The Transactions shall be published from time to time, and at such prices as the Council shall direct for each Part or Volume; but the price for one copy of each Part or Volume, to each Member or Subscriber who shall have paid his Annual Contribution for the year in which such Part or Volume shall be published, shall not exceed three-fourths of the price charged to the public.

3. Foreign Members of the Society who shall have paid the Annual Subscription for the year, and ordinary English Members and Subscribers resident more than fifteen miles from London, shall be entitled to receive the Transactions of the Society published during the year without any further payment.

4. The superintendence of the Publications shall be by a Committee, which shall consist of thirteen Members to be appointed by the Council, including the President, Vice-Presidents, Treasurer, and Secretaries.

5. The Committee of Publication shall consider every Paper which shall have been communicated to a General Meeting of the Society, and shall report to the Council thereon; but no Paper shall be reported on at any Meeting of the Committee unless there shall be three or more Members present; and such Committee shall be convened by the Secretary every third month or oftener, when all papers read since the last Meeting of Committee shall be produced and referred.

6. Authors of Memoirs to be published in the Transactions shall be allowed 25 copies of their communications with uncoloured plates, gratis, or any additional number, if required, the entire expense of which and the colouring of all plates to be paid for by the Authors.

7. A Journal of Proceedings of the Society shall also be published quarterly or half-yearly, containing Abstracts of the Papers read and Notices of other Matters communicated at the Ordinary

Meetings of the Society, which Journal, together with the Transactions, shall be edited by the Secretaries, or one of them, and shall be bound up and sold with the Transactions.

Chap. XXII. *Alteration of the By-Laws.*

Any of the By-Laws of the Society may at any time be repealed, or altered and amended, or others adopted in lieu thereof, at any Meeting of the Society, to be specially summoned in pursuance of Notice to be given to the President and Council, to be signed by six Members at least, such Notice to specify the intended repeal or alteration, and to be read at three General Meetings of the Society previous to such Special Meeting.

THE SCHEDULES REFERRED TO IN CHAPTER XX. OF THE PRECEDING BY-LAWS.

No. 1.

Form of the List for the Council.

List of Four Members of the present Council recommended by the present Council to be removed at the Election on the day of January, 18 .*

A. B.	
C. D.	
E. F.	
G. H.	

List of Four Members recommended to be elected into the Council.

I. K.	
L. M.	
N. O.	
P. Q.	

No. 2.

Form of the List for the Officers.

List of Persons recommended by the present Council to be appointed to the offices of President, Treasurer, and Secretaries of the Society, at the Election on the day of January, 18 .*

President .....R. S.	
Treasurer .....T. U.	
Secretaries..... { W. X. / Y. Z.	

* If any of the Names in these Lists be objected to, they must be struck out previous to the Ballot, and other Names substituted in their stead in the blank spaces left for that purpose.

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TRANSACTIONS

OF THE

ENTOMOLOGICAL SOCIETY

OF

LONDON.

I. *On the Habits of the "Drivers" or Visiting Ants of West Africa. By* Rev. Thomas S. Savage, M.D., of Cape Palmas, Corr. Mem. of the London Ent. Soc.; Boston Nat. Hist. Soc.; National Inst., Washington; D.C., &c. (In a letter addressed to J. O. Westwood, Esq., Sec. Ent. Soc. London.)

Fishtown, near Cape Palmas, W. A.
5th August, 1845.

Dear Sir,

In compliance with a promise in former letters, I proceed to give you my "Notes upon the Habits of certain Species of Ants in the vicinity of Cape Palmas, W. A." You will bear in mind, however, that I am still pressed with duties of higher moment, and can devote to these observations such hours only as are needed for recreation.

As on former occasions, I have avoided all attempts at technical descriptions, thus giving myself more time to investigate the habits of my specimens and transmit more frequently. I feel the less reluctance in doing this, knowing your ability, and being assured that with the same specimens before you nothing will be lost in this respect to science or Africa.

Great confusion exists, it would seem, in the accounts of travellers respecting the ants generally of this country, often being characterized as a whole by traits that belong to particular genera or species only; one author copying from another, and none making more than casual observations, unless it be Smeathman, whose attention was given chiefly to the habits of the *Termes fatale*, or white ants proper.

My present notes have respect to one species only of the family of *Formicidæ*. In a subsequent communication I propose to speak of the *Termes fatale*, but so far only as I may discover new facts and detect inaccuracies in the accounts already published.

The insect in question is known here under the *significant* name of "Driver." I am not aware that it has ever been described or that it exists in any of the European Cabinets. It would, however, be strange if an insect of almost equal prominence with the *Termes fatale*, and acting a far more important practical part in the economy of nature, should be found, at this day, without "a local habitation and a name" in some of your Systems of Classification.

From the careless and casual manner in which the "ants of Africa" have been spoken of by some authors, I am inclined to think that it has been noticed under the name of "*Termes viarum*;" not by Smeathman, for his account of that insect indicates radical differences between it and mine, though they possess some traits in common.

Mr. Robert Clark, surgeon to the colony of Sierra Leone, in a work recently published, enumerating "the ants" of that region, gives by name the five species of Smeathman's *Termes*, and in the same connection remarks, that "the travelling ants, or *Formicæ viarum*, will occasionally march into houses, where they devour everything eatable they can find." I am at a loss to know what ant he could have in his mind other than the "Driver" of this region; but if, by "everything eatable," he refers to the food of man, he is mistaken, for there are many things edible to us that they will not touch; and if by it he means "everything eatable" to the insect itself, he gives us no information of its habits in this respect, for he states neither what it will eat nor what it will not.

Again, in close connection he says, "I have often been assailed in some tracts by a highly fetid odour emanating from the copswood skirting the road side; the odour not unlike the stench proceeding from the carcass of a dead horse, being concentrated, as it were, in one place. The natives invariably speak of the stench

described as proceeding from dense masses of the travelling ants near or at the locality."—(page 123.) There can be no doubt that he speaks here of the "Driver;" but he is much mistaken, and we would account for it on the ground that he founded his statement on the representations of such inaccurate observers as the native Africans. I readily recognize the odour of which he speaks; but if it proceeds from an ant at all, it is from another similar in size, colour and aspect to the largest class of the "Drivers." It passes among the colonists at Cape Palmas under the vulgar name of "Bug-a-bug" (which appellation also they give to the *Termes fatale*). It does not, however, go forth in masses; indeed it does not exist in large numbers, and is comparatively rare. It is the impression of the colonists at Cape Palmas that "the stench" spoken of by Mr. Clark proceeds from this "bug-a-bug;" but it is often perceptible to an extent too great for this always to be the fact. On riding through the low grounds after a rain, or in the morning, it may be detected; but in such cases it undoubtedly has its source in the decay of animal matter. The Drivers emit no perceptible odour *per se;* did they, it would be absolutely intolerable in a dwelling-house to a person of delicate nerves, so great are their numbers. If this disagreeable odour is ever perceived among them, it must arise from their prey being in a putrescent state.

I have made these remarks, in passing, solely for the purpose of correction, and would here observe that Mr. Clark gives us in this instance, though unintentionally, a good specimen of the way in which the numerous loose and inaccurate statements that are abroad have arisen respecting this anomalous country, its productions and capabilities.

It is very probable that the insect referred to by Messrs. Kirby and Spence, on the 100th page of the 2nd volume of their Introduction, (the few particulars respecting which being derived from Prof. Afzelius,) is the one in question.

I think it is that, without doubt, of which Mr. Smeathman speaks when he says, "one species which seems at times to have no fixed habitation ranges about in vast armies. By being furnished with very strong jaws they can attack any animal whatever that impedes their progress, and there is no escape but by immediate flight or instant retreat to the water. The inhabitants of the negro villages are frequently obliged to abandon their dwellings, taking with them their children, &c., and wait till the ants have passed."—Swainson's Geography and Classification of Animals, p. 100, from the Preface to Drury's Insects, vol. iii.

Mr. Smeathman's account is correct so far as it goes, as will appear in the sequel, though the facts he gives are by no means incidental occurrences, but all in the way of its regular habits. Never having seen Drury's work (a subject of frequent regret) I do not know whether Mr. Smeathman ever gave more than this slight notice of their habits.

It is evidently closely allied to the *Atta cephalotes* of Fab., found in the West Indies and South America, and, like that named by the French "*Fourmi de visite*," would be more appropriately styled the "visiting" than the "travelling ant." The appellation "Driver," however, is still more significant, as will appear from the extract from Mr. Smeathman and my account. It not only travels and visits, in common with other species of ants, but it also *drives* every thing before it capable of muscular motion, so formidable is it from its numbers and bite; in respect to the last fact it stands unique in its habits, and, in distinction from other species of this country, may well take for its vulgar name that of *Driver*. Whether it will find its proper location technically under the genus *Formica proper* I leave you to decide, and proceed to a detailed account of its habits so far as I have observed them.

From its locomotive habits the impression, as in the case of Smeathman, has obtained, that it has no fixed habitation. This my observations go to confirm in respect both to their appearing and disappearing from certain localities, and the absence of cells or magazines. Its domicil, if such it may be called, consists of a shallow excavation under the roots of trees, shelving rocks, and almost any other substance that will afford a shelter; not originating with themselves, but adopted and completed as the wants of their community may require. The greatest depth to which I have known them penetrate is about two feet. The interior exhibits no mechanical contrivance, for which many other ants are celebrated. There is an old saying, which is not without meaning, that "a man's dwelling indicates the nature of his employment." A robber's house will not exhibit, either in or out, the indications of a permanent abode that an honest man's does; so with that of the insects before us, their mode of life will not admit of cells and magazines and other interior arrangements by which the domicils of other ants more retiring and less aggressive in their habits are characterized. The nearest approach they make to such an arrangement is the adoption of fissures in the ground, crevices in rocks, and the interstices between small stones, &c. that may fall within the compass of their dwelling-place.

Their sallies are made in cloudy days and in the night, chiefly in the latter. This is owing to the uncongenial influence of the sun, an exposure to the direct rays of which, especially when the power is increased BY REFLECTION, *is almost immediately fatal.* If they should be detained abroad till late in the morning of a sunny day by the quantity of their prey, they will construct arches over their path, of dirt agglutinated by a fluid excreted from their mouth. If their way should run under thick grass, sticks, &c., affording sufficient shelter, the arch is dispensed with; if not, so much dirt is added as is necessary to eke out the arch in connection with them. In the rainy season, or in a succession of cloudy days, this arch is seldom visible; their path, however, is very distinct, presenting a beaten appearance and freedom from every thing moveable. They are evidently economists in time and labour; for if a crevice, fissure in the ground, passage under stones, &c. come in their way, they will adopt them as a substitute for the arch. This covered way seems to be designed in part for the protection of workers in transporting prey, pupæ, &c., but chiefly *against the direct rays of the sun, an exposure to which, in places where the* REFLECTION *is strong, is certain* death in less than two minutes. When the sun's rays are intercepted for days, the arch is wanting; and, even with the arch, in a bright strong sunshine, masses of the Drivers are found under the thick grass in holes and other places, regaling themselves in the shade till the decline of the sun, when their work is renewed with their characteristic vigour.

In cloudy days, when on their predatory excursions, or migrating, an arch for the protection of the workers, &c. is constructed of the bodies of their largest class. Their widely extended jaws, long slender limbs, and projecting antennæ intertwining, form a sort of net-work that seems to answer well their object. Whenever an alarm is given the arch is instantly broken, and the ants, joining others of the same class on the outside of the line, who seem to be acting as commanders, guides, and scouts, run about in a furious manner in pursuit of the enemy. If the alarm should prove to be without foundation, the victory won or danger passed, the arch is quickly renewed, and the main column marches forward as before in all the order of an intellectual military discipline.

I will here describe an attempt that I recently made to destroy one of their communities, which, with the facts in the order in which they transpired, and the collateral circumstances attending it, will fairly illustrate many of their habits.

My observations were made in part at my former station (Cape Palmas), where I resided nearly eight years. I have been at my present station about eight months. During the first four months of the latter period I was greatly annoyed by the frequent visitations and ravages of these insects; at one time literally *driving* out every member of the female department of the school; at another the male department; then the inmates of my own dwelling; again, attacking my horse, then my pigs, fowls, &c. &c., nothing in fine possessing animal life escaping their assaults. They always pounced upon us at night, and generally when our senses were reposing in sleep. Occasionally we were apprised of their designs at nightfall by a few suspicious individuals lurking in the vicinity in advance of the main body, but mostly they took us by surprise. At last their annoyance seemed to have reached the highest point of our forbearance, and a resolution was forthwith taken to discover their habitation, and, if possible, expel them from the vicinity. Accordingly I commenced cutting over the premises, and had proceeded as far as two-thirds the way down the mount on which my dwellings stand, when, beneath a shelving rock of decomposing granite, their haunt was discovered. They had been roused by the noise and efforts of the workmen, and had come forth in incalculable numbers for defence, literally blackening the surrounding grass and shrubbery. Lines of ants, going and coming agreeably to the rules of their order, were running in opposite directions. Their paths were very distinct and well trodden, of about an inch in width. In other directions were seen covered ways forsaken, the object of their formation no longer existing,—no prey having been discovered, or, if found, being disposed of,—and other regions lying open for exploration. Their numbers could not be computed; millions on millions seemed to be there, besides thousands that were going and coming with astonishing speed and alacrity.

In attempting their destruction I adopted the mode of the natives, which is, to ignite on the spot a collection of the dried leaves of a species of Corypha (Fan Palm of this coast), about six feet in diameter, and dried grass, with other combustible matter. A fire of great intensity was thus kindled, which continued to burn for considerable time. This I supposed would be the last of our troublesome neighbours. Two days after, however, on going to the spot for the purpose of examining into their domicil, I was surprised to see a tree at a short distance, about eighteen inches in diameter, to the height of four feet from the ground, with the adjacent plants and earth, perfectly black with them. From the

lower limbs (four feet high) were festoons or lines of the size of a man's thumb, reaching to the plants and ground below, consisting entirely of these insects; others were ascending and descending upon them, thus holding free and ready communication with the lower and upper portions of this dense mass. One of these festoons I saw in the act of formation; it was a good way advanced when first observed: ant after ant coming down from above, extending their long limbs and opening wide their jaws, gradually lengthened out the living chain till it touched the broad leaf of a Canna coccinea below. It now swung to and fro in the wind, the terminal ant the meanwhile endeavouring to attach it by his jaws and legs to the leaf; not succeeding, another ant of the same class (the very largest) was seen to ascend the plant, and, fixing his hind legs with the apex of the abdomen firmly to the leaf under the vibrating column, then reaching forth his fore legs and opening wide his jaws, closed in with his companion from above, and thus completed the most curious ladder in the world.

The line of migrating ants from their former habitation was still continued. When first observed it was composed of individuals of all sizes, pupæ, eggs, &c. commingled in the act of transportation. The cause of this assemblage on the outside was the small dimensions of their recently adopted domicil. There was evidently a cavity under the tree, but not of sufficient size for their numbers; they were therefore busily engaged in enlarging it suitably for their accommodation. The quantity of dirt thrown up in the process was remarkably small. In about two hours I visited the spot again, when the hanging lines or festoons were gone, and about half of the mass also; some below the surface, others on their predatory excursions. One of their paths I traced to a distance of about twenty rods, when I was prevented from going further by a thicket. Their course was easily followed by their beaten track and the arched way, the latter of which was very imperfect, consisting of clay in exposed places, and of grass, sticks, leaves, &c. whenever they could be made to answer the purpose. The line of ants was very much broken and irregular, many of them being gathered into groups in the grass and in holes enjoying the coolness of the shade, waiting for the arrival of evening in which to renew their labours.

Combustible matter was again applied, and it was not long before a dense column was seen issuing from under the opposite side of the tree, observing their usual order and arrangement. The day was cloudy, a little rain falling; there was therefore no need of the clayey arch; but the larger class, arranging themselves

on either side as before described formed the substitute. Under this arch, armed on all sides with sharp claws, and fierce, hooked, open jaws, " the feebler folk," or, as my native interpreter said, the women and their children, passed rapidly forward in conscious safety. Others of the largest class appeared in the main line at different distances carrying nothing, yet acting no unimportant part. They would occasionally step out of the line and return, as if holding communication with their comrades behind; then, taking their places as before, march on with all their former celerity. Others again of the same class were seen on the outside, running here and there, then stopping, elevating their heads to a point above the others, stretching forth their fore legs, opening wide their jaws, and twirling in every direction their long antennæ, as if in apprehension of danger.

I visited them again the next morning, when I found them still engaged in removing. Thousands and tens of thousands must have been destroyed by the two fires, and yet apparently their numbers were undiminished. I have not on this or any other occasion detected a winged individual, though it is the season when such are to be found in all communities of ants not apterous.

They carry their pupæ and prey longitudinally under their bodies, held firmly between their mandibles and legs, the latter of which are admirably calculated by their length and slenderness for this purpose. The freedom and ease with which they carry their burthen is truly surprising. I have seen the third class, or workers, with pupæ of the first class, or soldiers, certainly as large again as themselves; and, again, with prey twice or more their size, moving with as great a degree of celerity as we should suppose them capable of doing without any burthen.

Their mode of biting differs from that of the soldiers among the *Termes*. The mandibles of the latter are flat and sharp, and move in a cross direction, cutting in the manner of scissors. The mandibles of the Driver of the first class are very prominent and formidable, strongly hooked, having one tooth; those of the second class are flatter, sharper, and armed with two strong teeth, the edges finely serrated, and admirably calculated for lacerating and cutting muscular fibre. The onset of the former is with a grasp that causes their victim to start and wince as if life were in danger; their mandibles are fixed so strongly into the flesh, and their hold retained with such pertinacity, that a separation is effected often only by a dismemberment of the body. If permitted to retain their hold, the motion of their jaws is alternately from one side to the other, penetrating deeper and deeper at every stroke. With

the second class there is not only this gradual penetration, but at the same time a lacerating and cutting of the flesh, with an approximation of the jaws at each effort. This difference in their form and motion in the two classes led me to infer a difference of duties or office in their economy. This impression has been confirmed by repeated observations. To the first class, it would appear, is assigned the defence of the community; it is theirs also to attack and disable their prey. The second lacerate and cut the flesh, and are assisted by the first in tearing it off. Upon the third, who appear to be especially the labourers, devolves the burthen of transportation, whether of prey or pupæ. They are seen to be assisted often by the second class, and, when the prey is too large for either, the first is called in. In the small vial sent herewith will be found the different classes, as they were captured in the act of transportation, with the different articles of prey had at the time in their jaws. But one specimen of Class 1 will be found among them; this was captured with the leg of a locust, evidently just taken and rent asunder (which is in the vial), too large to be transported by the smaller classes.

Whenever a stream of water intercepts their course in their excursions and migrations, if it should not be extensive they compass it, but if otherwise, they make a line or chain of one another, gradually extending themselves by numbers across, till a connection is formed with the opposite side, and thus a bridge is constructed, over which the main body passes in safety.

There is another habit equally interesting that may be mentioned in this connection. It has been asserted of other species of the *Formicidæ* in South America, though doubted by *in-door* naturalists at home. Our seasons are divided into "wet" and "dry," each making up in a general way half of the year. During the former we frequently have violent and continued rains, so that the low grounds, either directly from this cause, or the sudden swelling of the rivers, are overflowed for days. The Drivers delight in rather low localities, generally on the side, but near the base of hills; consequently they are liable to be driven from their haunts for self-preservation. In such an emergency they throw themselves into a rounded mass, deposit their "feebler folk," pupæ and eggs in the centre, and thus float upon the water till a place of safety is reached, or the flood subsides. Even in situations beyond this overflow they must be deluged in their holes for days, so copious and incessant are the rains at times; and one would suppose that, under such circumstances, vast numbers must perish. Some undoubtedly do; but the Lord, in this as in other orders in

the animal kingdom, has pursued a system of compensation beautifully illustrative of His goodness, and the minuteness of His Providential care over even the meanest of His creatures. As He has endowed this insect with a high degree of life, so He has given to it a corresponding degree of tenacity, thus enabling it to exist under the many unfavourable circumstances incident to its habits. Feeling assured that such was the fact, I commenced a series of experiments in proof of the point. An individual of the largest class was submerged to the bottom of a glass of water, where it struggled for about three-fourths of an hour, then apparently expired. It revived in about ten minutes after it was taken out, exhibiting about as much vitality and ferocity as before. It was re-submerged at 1 P.M., and taken out after 6 P.M., with like results. It was submerged the third time, and then permitted to remain for twelve hours or more. It revived on being taken out, so far as to move about on its side, and continued to exhibit signs of life for twelve hours more, when it expired. Others that were permitted to rise to the surface, and remain, survived some time longer.

Another fact, illustrating their tenacity of life, may here be stated. The head of one of the largest class, when dissevered from the body, grasped the finger of an attendant so furiously as to cause an immediate flow of blood. It was kept in a glass tumbler from 3 P.M. till the next morning at 8 o'clock, when the finger was again applied, and apparently as severe a wound as before inflicted. Another individual of the same class was decapitated at 7 A.M., and at half-past 9 the next morning,—26½ hours from the time of decapitation,—a piece of newspaper was held between the jaws, which it grasped and retained with considerable force. I then applied the small finger of my right hand, which it bit severely; indeed so powerful was the grasp that the point of the mandibles met beneath the cuticle. It then partly withdrew one mandible, and pointing it more perpendicularly, penetrated deeper, then the other, and thus at every alternate stroke giving to the mandible a direction more vertical, wounding and cutting wider and deeper precisely in the manner of the insect in possession of all its parts and powers. The sensation at each thrust was like that of a pin, and equally painful; and when the mandibles were withdrawn the blood flowed as freely. This head continued to give signs of life for more than 36 hours after decapitation. The body to which it belonged lived still longer,—more than 48 hours!

I know of no insect more ferocious and determined upon vic-

tory. They fiercely attack any thing that comes in their way,—"conquer or die" is their motto. I have known a live coal of fire held before them, at which, though so obnoxious to heat, they rushed with indescribable ferocity, releasing their hold only in death. They have no eyes visible through my glasses, which, however, are not powerful. They seem to be less under the influence of the sense of smelling than of hearing or feeling.

If taken a few feet from their habitation they seem to be at a loss to know the way to return; some will at last succeed in arriving at home, others not. To decide the point whether they detected the proximity of prey by the sense of smell or not, I placed near one of their domicils, first a small bird, dead, then a barn-door fowl, but not an individual was attracted to the spot. They were roused several times by knocking on the covering of their habitation; this brought them forth in large numbers, when they ran about in different directions in search of the intruder, coming very near to their favourite food, but not one in contact with it. The bird was now brought within two, then one foot of their nest, both times with the same success. At last one or two, as if by accident, found it out, and laid hold of the feathers in a great rage, then retired within their habitation. I waited a long time to see if any intelligence would be conveyed of the proximity of their favourite prey, but no evidence of the fact appeared. I roused them again, and put some of the largest and of the second class upon the bird; they jumped about in great perturbation and rage, pulled vigorously at the feathers, then biting into the flesh, at last disappeared without further effort. No intelligence being yet conveyed that food was at hand, I brought them forth in still greater numbers, and thrusting the fowl down among them, held it there till it was well covered, and then withdrew it to a distance of about two feet, to observe their proceedings. As the fowl was drawn back many ants were left on the intervening ground, and thus free communication was soon established between it and their domicil. A few of the largest class, which are always the first to come forth for defence, were seen running to and fro, forming a line which, when completed, was seen to be composed mostly of individuals of classes Nos. 3 and 2, No. 1 evidently taking management of the others. The first step in their operations was to clear the path of all moveable obstructions. This was done chiefly by the third class; some of No. 2, and occasionally No. 1, coming in when large obstacles were to be removed. It was intensely interesting to see these little creatures gaining victory, by one process after another, over comparatively mountain obstacles

in their way; greater difficulties only rousing them to greater effort. Here would be seen one dragging along a stick four times its length; there, another, pushing, then grasping and pulling along a stone many times its weight; and, when more power was requisite, others coming in to his aid, all knowing that a work was to be performed, and each doing promptly his part. Thus were stones, sticks, leaves and grass successively withdrawn from within their line, and deposited at a distance from the scene of their labours. A regular, distinct footpath was soon made visible, and in readiness for the quick transportation of their prey. In the meantime the largest, with an equal number of the second size, were busily engaged upon the head of the fowl, depriving it of its feathers. This promised to be a slow and tedious operation; but the gradual increase of feathers, and the denuded skin, were sure indications of their success. The feathers were *pulled out;* sometimes one, two and three ants would be seen tugging most lustily at one, but I am inclined to think that the largest feathers were extracted by lacerating the flesh at their root, though I was not able to decide this point fully. Those that fell in their way were borne off by the smaller ants; others were made to answer as a covering to their pathway, being held together by the largest size or soldiers. The operation of *picking* began at the beak, and was gradually extended backward. The neck being half stripped, they then began the work of laceration at the eyes and ears. It was some time before any visible impression was made, but at last, though by no means so expeditiously as I expected, deep cavities appeared, and muscles, membranes and tendons were reduced and borne off to their habitation. The juices, and a portion of the muscular fibre, I think, must be consumed on the spot at such times, though the largest portion is carried to their domicil.

At first there was considerable confusion in the lines. They seemed to be incapable of keeping the right path, and even missed the various entrances to their domicil. Individuals of the largest class were seen to arrange themselves on either side, between whom the lines of workers passed and repassed with a good degree of order. These were acting evidently the part of guides rather than guards, though at times they acted in the latter capacity also. They would place their abdomen horizontally on the ground, and laying hold of fixed points with their hind feet, (which together thus acted as a fulcrum,) elevate the anterior portion of their bodies to the highest point, open wide their jaws, and stretch forth their antennæ, which for the most part were fixed, as if in the act of listening and watching for approaching

danger. They would occasionally drop their bodies to the ground again, run off to one side, and fiercely work their jaws and antennæ, as if having detected some strange sounds in the distance. Discerning nothing, they would quickly return to their posts and resume their positions, thus acting as scouts. The hour for fulfilling appointments having arrived, I left, designing to make further experiments; but on my return I found that the fowl had been stolen by some of my covetous, perhaps hungry parishioners, who excused the act of aggression by saying that the Drivers were their most grievous enemies, often depriving them of the two things they mostly loved,—*poultry* and *sleep;* and that I was entertaining them with undue hospitality; others more jokingly said, that I was making them my *Fetish*, and offering to them *sacrifices* of birds and fowls.

Being in the immediate vicinity of our teacher's house they became troublesome, killing six of his chickens in one night; we had therefore to decide forthwith upon their destruction. This was effectually and instantly done by a few gallons of boiling water poured into their domicil.

Like all their habitations that I have seen, this was on the side of a hill, and consisted of a slight excavation about eighteen inches in depth, made for the interment of a human body, according to the custom of this tribe, covered over with the fragment of an old canoe. On removing this covering vast numbers of the ants with their pupæ were discovered dead, and the spot, which might be called their *nidus*, occupying a space of about eighteen inches in diameter. The soil was composed of clay and small stones; the latter were abundant, the interstices of which seemed to be their only cells. In every instance that has fallen under my observation the soil selected has been of this loose character, and the interstitial spaces so occupied.

This was the smallest community I had seen; whether it was a colony or not I cannot say, but it was supposed to be the remains of the one destroyed by fire, as no other was known to be in our neighbourhood.

They do not treasure up their food for any length of time, which may be inferred from the construction of their domicil. They go forth in search of prey at *all seasons*, but more especially during the "*rains*," which corresponds to the winter of temperate climates. Their more frequent appearance at this season is accounted for on the ground that the weather then is generally cloudy and cool; perhaps, also, they are driven forth by the accumulation of water in their habitation.

They are not without their uses in the economy of nature. They keep down the more rapid increase of noxious insects and smaller reptiles; consume much dead animal matter, which is constantly occurring, decaying, becoming offensive, and thus vitiating the atmosphere, and, which is by no means the least important in the Torrid Zone, often compelling the inhabitants to keep their dwellings, towns, and their vicinity, in a state of comparative cleanliness. The dread of them is upon every living thing.* It may be literally said that they are against every thing and every thing against them. I have known my dog, on meeting them in the road, instead of running any risk by leaping over them, go a great distance round to avoid their well-known bite. My donkey has more than once stopped so suddenly and turned, as to throw me over her head, or to one side, and when urged forward, leaped far over the line.

They will soon kill the largest animal if confined. They attack lizards, guanas, snakes, &c. with complete success. We have lost several animals by them,—monkeys, pigs, fowls, &c. The severity of their bite, increased to great intensity by vast numbers, it is impossible to conceive. We may easily believe that it would prove fatal to almost any animal in confinement. They have been known to destroy the *Python natalensis*, our largest serpent. When gorged with prey it lies powerless for days; then, monster as it is, it easily becomes their victim. It is universally said by the natives that this serpent, having disabled his victim by the fearful process of constriction, makes a wide sweep in the vicinity in search of the *Drivers*. If he discovers them, he abandons it to their more numerous jaws; but if not, he returns to the work of engorgement. This account, whether true to the letter or not, gives a good idea of the dread with which it inspires the different orders of animals.

In a recent attack they killed a snake under my house about four feet long. It made its way out, but, seemingly incapable of progression, could not make its way off. Its motions were such as to lead to the conclusion that it was blind. It writhed and twisted instead of going forward, giving the ants time to accumulate, and thus by numbers overpower it. It is very probable that, with one stroke of their jaws, they destroyed the power of vision, and brought it immediately within their grasp.

Their entrance into a house is soon known by the simultaneous

* It is stated by my native interpreter that a certain species of *Julus*, which emits a peculiar odour, if thrown into their domicil, will cause them to abandon it. Its truth remains to be proved.

and universal movement of rats, mice, lizards, *Blapsidæ*, *Blattidæ*, and of the numerous vermin that infest our dwellings. Not being agreed, they cannot dwell together, which modifies in a good measure the severity of the Drivers' habits, and renders their visits sometimes (though very seldom in my view) desirable.

Their ascent into our beds we sometimes prevent by placing the feet of the bedsteads into a basin of vinegar, or some other uncongenial fluid; this will generally be successful if the rooms are ceiled, or the floors overhead tight, otherwise they will drop down upon us, bringing along with them their noxious prey in the very act of contending for victory.

They move over the house with a good degree of order unless disturbed, occasionally spreading abroad, ransacking one point after another, till, either having found something desirable, they collect upon it, when they may be destroyed "en masse" by hot water; or, disappointed, they abandon the premises as a barren spot, and seek some other more promising for exploration. When they are fairly in we give up the house, and try to await with patience their pleasure, thankful, indeed, if permitted to remain within the narrow limits of our beds or chairs.

They are decidedly carnivorous in their propensities. Fresh meat of all kinds is their favourite food; fresh oils they also love, especially that of the *Elais guiniensis*, either in the fruit or expressed. Under my observation they pass by milk, sugar, and pastry of all kinds, also salt meat; the latter, when boiled, they have eaten, but not with the zest of fresh. It is an incorrect statement, often made, that "they devour every thing eatable" by us in our houses; there are many articles which form an exception. If a heap of rubbish comes within their route, they invariably explore it, when larvæ and insects of all orders may be seen borne off in triumph,—especially the former.

II. *Description of the "Driver" Ants, described in the preceding Article.* *By* J. O. Westwood, F.L.S., &c.

The remarkable account of the habits of the Driver ants of tropical Western Africa, contained in the preceding article, by Dr. Savage, is too interesting not to require that the species in question should be entomologically described, so as to be at once identified, and introduced into its place in the family of the ants to which it belongs. Having been requested to draw up a description of the insects sent in great numbers by Dr. Savage, I herewith offer, by way of supplement to his article, the following characters, with the accompanying remarks. A comparative examination of the different individuals was in fact especially necessary, in order to learn the real nature of the different classes, with reference to the question whether the Soldiers among the *Formicidæ* were analogous to the Soldiers among the *Termitidæ*, that is, whether they formed, as in the latter, a distinct class, or whether they were merely neuters, with larger heads than usual.

On carefully examining the specimens which were sent to England in spirits, I found that they varied in length from $1\frac{2}{4}$ to 5 lines, all possessing the same structure not only of thorax, abdomen, legs and antennæ, but also of the maxillæ and labial apparatus. All likewise agreed in the general structure of the head, the only material difference being that the teeth of the mandibles are more developed in the small individuals than in the large ones; that the heads in the latter are comparatively larger; and that in the former there is a more evident carina down the middle of the front of the head. I must confess that I could discover no distinct character to separate the largest individuals from the others; there seemed indeed to be a regular gradation in the size from the largest to the smallest, which the natives appear to consider as females. I thus regard them all as neuter ants, and consider it very unfortunate that we are at present unacquainted with the males and females, or with the larva and pupa state of this interesting insect. These lacunæ will, I trust, be still filled up by Dr. Savage.

But the most curious circumstance which my examination of these insects made evident was, that all the remarkable economy detailed in the preceding memoir is performed by creatures destitute of organs of sight, having been unable to detect the slightest indication of eyes in any of the individuals.

This latter circumstance, in conjunction with the structure of the lower parts of the mouth, and the existence of only eleven joints in the antennæ, at once determines the intimate relation of the Driver ants to my genus *Typhlopone*,* and completely confirms the views which I published both in my Introduction, and in a paper in the sixth volume of the Annals of Natural History, on the Formicideous nature of *Typhlopone*, in opposition to the opinion of Mr. Shuckard, that the latter is the female of a different family; an opinion the more remarkable, when it is remembered that Mr. Shuckard had before him at the same time the interesting genus *Anomma* (described in a previous number of the same Annals), and which, like the Driver ants, is so very closely allied to the genus *Ponera*, one of the species of which is actually described by Latreille as wanting eyes. It will thus be seen that the discovery of the winged individuals of the Driver ants is the more to be desired, as it will enable us at once, and still more satisfactorily, to settle the question of the relations of these insects, as well as, I trust, those of the *Dorylidæ*, which, according to the remarks which Captain Boys has communicated to me, are equally Formicideous.

The Driver ants seem to belong to the genus *Anomma* of Shuckard, above alluded to, so far at least as I am able to judge from external characters, the unique specimen of *A. Burmeisteri* being preserved in the British Museum, where the dissection of the mouth of unique individuals is not permitted. The new species may be thus described.

Anomma arcens, Westw.

Neutr. Nigra, subnitida; antennis (articulo basali excepto), coxis, geniculis, tarsisque piceis; capite plus minusve oblongo-quadrato, in individuis maximis postice magis angusto, margine postico emarginato; clypeo, inter basin antennarum, bicarinato; antennis in impressionibus duabus insertis, 11-articulatis; oculis obsoletis; mandibulis elongatis, gracilibus, falcatis, ante medium dente majori alteroque pone medium plus minusve distincto, interstitio serrato; maxillis lobis duobus apicalibus, externo ad apicem setoso; palpis maxillaribus brevissimis, et, ut videtur, 3-articulatis; labio magno carnoso striato, palpis labialibus longitudine labii 2-articulatis, thorace e segmentis duobus longitudine æqualibus constanti, prothorace infero, lateribus dilatatis tamen supra visis; meso-

* Compare the figures at the foot of Plate I. with those in the upper part of Plate II., in the sixth volume of the Annals and Magazine of Natural History.

thorace antice latiore, metathorace parum compresso utrinque spiracula instructo, apice recte truncata; abdominis pedunculo elongato utrinque versus basin tuberculo minuto instructo; segmento sequenti pedunculo latiori semi-ovali, reliquis parum constrictis.

Long. corp. lin. $1\frac{3}{4}$—5.

Habitat in Africa occidentali tropicali. D. Savage.

DESCRIPTION OF THE FIGURES.

Plate I. fig. 3. One of the Soldiers, rather larger than the insect; 3*a*, *b*, *c*, *d*, the heads of four of the different sized individuals; 3*e*, maxilla; 3*f*, instrumenta labialia. The lines indicate the natural length of different individuals.

III. *Descriptions of two new Goliath Beetles from Cape Palmas, in the Collection of the Rev. F. W. Hope. By* J. O. Westwood, F.L.S., &c.

The selection of characters of evidently minor importance—which have been well termed artificial ones—for the discrimination of groups, whether of high or low rank,—which seem to afford very satisfactory results in our distribution of species or genera, becomes more and more difficult in proportion to the increase of our knowledge of the species of such groups. Taking, for example, those African Goliath beetles which have the prothorax broadest behind, with a simple terminal lobe to the maxillæ, and long fore legs, in the males; we have *artificially* defined one group as distinguished by having the fore legs externally dentated, and the upper surface of the body velvety; and a second as having the fore tibiæ not externally dentated, and the upper surface of the body (in the tropical species) brilliantly polished.

Within a very short time, however, Mr. Hope has received from Dr. Savage, who has indefatigably assisted in forwarding our knowledge of these interesting insects, two new species which disturb these previous arrangements. In one of these insects we have a velvety upper surface, combined with the externally simple fore tibiæ of the males, (although it is true that they exhibit a tendency to become toothed,) whilst the horn of the head is still further analogous to that of several of the males of the second of these two groups. The other species agrees more decidedly with the first of these two groups, in its velvety upper surface, and externally tridentate male tibiæ; but the general appearance of the insect, its comparatively small size, the form of the horn of the

head, and the shortness of the sternal process, remove it nearer to some of the subsequent groups.

Under these circumstances, I have no choice but to refer these two insects to distinct new subgenera, the first of which will enter as a section into the genus *Mecynorhina*, with the name of

SMICORHINA, Westw.

Corpus oblongum, depressum, supra velutinum, lateribus subparallelis, pedibus elongatis.

Caput maris mediocre, disco inter oculos in laminas duas parvas horizontales porrectum, angulis ante oculos porrectis acutis, clypeo anticè in cornu breve recurvum apice obconicum producto. Antennarum clava minuta. Maxillarum lobus internus in mare in unguem curvatum productus. Prothorax lateribus pone medium fere rectis, margineque postico fere recte transverso. Elytra elongata, depressa. Processus sternalis brevissimus, apice rotundato. Abdomen subtus in mare canaliculatum. Pedes elongati. Tibiæ anticæ maris satis graciles, extus tridentatæ, dentibus parvis, intus pone medium serratis. Tibiæ intermediæ maris in medio 2-dentatæ; tibiæ posticæ in medio 1-dentatæ. Tarsi elongati, simplices.

Species unica. *Smicorhina Sayii.* (Pl. I. fig. 1.)

Nigra, velutina; pronoto sanguineo, vittis quatuor irregularibus nigris, intermediis duabus antice abbreviatis; capitis facie cinereo-velutina, pedibus nigris, femoribus (præsertim posticis) sanguineo-striatis, tibiisque posticis ad apicem sanguineis, capite subtus nigro nitido.

Long. corp. (cornu capitis haud incluso) lin. 13, lat. elytr. lin. $5\frac{1}{2}$.

Habitat in Africa tropicali occid., Cape Palmas. D. Savage.

In Mus. D. Hope.

I have adopted the specific name of *Sayii*, suggested to me for this interesting species by the Rev. F. W. Hope, in honour of the late Thomas Say, the father of American Entomologists, and as a mark of respect to his countryman, Mr. Savage, by whom this interesting addition to the family has been made.

The second species will fall more naturally into my genus *Ceratorhina*, in which it will form a subgenus, which, from the very large horn of the head of the male, may be named

MEGALORHINA. Westw.

Corpus oblongo-ovale, subdepressum, supra velutinum; elytris postice angustioribus. Caput maris mediocre, supra fere

planum, dentibus duobus minutis fere ad oculos positis, angulisque ante oculos acute spinosis; clypeo in cornu valde elongato, elevato, subrecurvo, apice longe bifido producto. Antennarum clava mediocris; maxillarum lobus externus in mare in unguem corneum acutum productus. Prothorax transversus convexus, fere semicircularis, margine postico ante scutellum parum emarginato. Elytra subconvexa, postice sensim attenuata, maculis pallidis numerosis guttata. Processus sternalis antice porrectus, apice subobtuso. Pedes antici elongati, tibiis anticis curvatis, externe fere ad apicem emarginatis, interne serratis; tarsis elongatis, simplicibus. Tibiæ quatuor posticæ in medio inermes.

Species unica. *Megalorhina Harrisii.* (Pl. I. fig. 2.)

Supra opaco-velutina; capite supra albido, cornu subtus castaneo; antennis nigris, pronoto brunneo opaco luteo-tenuiter marginato, scutello brunneo; elytris olivacæo-nigris, maculis numerosissimis fulvescentibus in seriebus 5 in singulo elytro dispositis; pedibus castaneis, tibiis anticis tarsisque quatuor anterioribus nigris, tarsis posticis flavescentibus articulis obscuris; corpore subtus castaneo, cupreo, nitidissimo et æneo certo situ tincto, tibiis anticis intus denticulis 7 armatis.

Long. corp. (excl. cornu capitis ♂) lin. 18; lat. elytrorum ad basin lin. 9.

Habitat cum præcedenti.

D. Savage misit ad D. Hope, in cujus musæo hospitatur.

This magnificent insect is here named in compliment to Dr. T. W. Harris, one of the most zealous and learned Entomologists of North America, in pursuance of a suggestion made to me by Mr. Savage, by whom the unique specimen was forwarded to Mr. Hope.

DESCRIPTION OF THE FIGURES.

Plate I. fig. 1. *Smicorhina Sayii;* 1*a*, the head seen sideways; 1*b*, the head seen in front; 1*c*, maxilla; 1*d*, sternal process; 1*e*, ditto seen sideways.

Fig. 2. *Megalorhina Harrisii;* 2*a*, head seen in front; 2*b*, ditto sideways; 2*c*, maxilla; 2*d*, sternal process; 2*e*, ditto seen sideways.

IV. *Description of a new British Moth.* *By* J. W. Douglas, Esq., M.E.S.

[Read 1st February, 1847.]

Family TORTRICIDÆ.

Genus Anchylopera, *Stephens.*

Anchylopera subarcuana, Douglas. (Pl. II. fig. 4.)

Head and palpi white. Upper wings somewhat falcate, dull ferruginous, having a darker flexuous line extending down the centre from the base, about two-thirds of the length, forming a small arch in the middle of the wing, and then continued angularly to the apex. The base of the costa is ashy white, and the colour is much lighter along the lower edge and within the posterior angle. Lower wings rather dusky. Body griseous. Expansion of wings about six lines.

This is a very distinct species, and is intermediate between *A. biarcuana* and *diminutana*, from both of which however it may be known at a glance by its white head and palpi. I have only one specimen, which I took May 12th, 1844, at Wimbledon Common. Mr. S. Stevens has a specimen which differs from mine in having the upper wings narrower and darker, but I believe it to be this species. Mr. Henry Doubleday also informs me that he has one taken near Whittlesea Mere last September, so that it would appear to be double brooded. I may add that M. Guenée has seen my specimen and that it is new to him.

V. *Description of a new Species of the Coleopterous Family* Paussidæ, *from India.* *By* J. O. Westwood, F.L.S., Sec. Ent. Soc., &c.

[Read 4th August, 1845.]

Since the publication of the last number of my "Arcana Entomologica," in which I completed an illustrated monograph of the family *Paussidæ*, I have been favoured by two gentlemen in India with specimens of two species of this family, forwarded to me through the medium of post letters, inclosed in small quills. One of these insects is the *Ceratoderus bifasciatus*, being the third individual of that species sent to Europe, the first having been brought from India by Fichtel, and deposited in the Royal Cabinet at Vienna, and the second being in the Collection of the Rev. F. W. Hope. This third specimen was sent me by Lieut. Col. J. B. Hearsey, having been taken on the clothes of one of his soldiers whilst on duty. The other insect, received by post, of which I now beg leave to lay a description and figure before the Society, was sent me by W. H. Benson, Esq., having been captured by that gentleman.

From the apparently 5-partite, depressed clava of the antennæ, the general structure of the maxillary and labial palpi (the former with the terminal joint smaller and more slender than the preceding, and the latter with the terminal joint large, subovate and subtruncate at the extremity), the tibiæ destitute of calcaria, and the long tarsi with the first joint larger than either of the three following joints, this new species enters into the genus *Ceratoderus*, which I proposed for the reception of *Paussus bifasciatus;* but in addition to a very different general facies, destitute of the glossy surface so peculiar in that species, with comparatively shorter and broader antennæ and feet, this new insect differs from it in the dilated second joint of the maxillary palpi, which is almost rounded and flattened, in the bipartite and angulated structure of the prothorax, the setigerous-margined elytra, and the outer angle of the extremity of the tibiæ being obliquely rounded off.

The genus *Ceratoderus** must therefore be more restrictedly

* It may be as well to observe in this place, that as this generic name is derived from κερ, *cor*, and not from κερα, *cornu*, it is strictly applicable only to the *C. bifasciatus*. It would therefore perhaps be better to propose a distinct generic name for the group, and to give each of the sections a separate subgeneric one; the name of *Melasnospilus* may therefore be proposed for the genus, *Ceratoderus* be retained for *C. bifasciatus*, and the name of *Merismoderus* be given to *C. Bensoni*.

characterized, so as to allow the introduction therein of the present new species as follows.

Antennæ clavâ depressâ, quasi 5-partitâ. *Palpi maxillares* articulo 2ndo maximo, 4to gracili, præcedente minori. *Palpi labiales* articulis tribus; 3tio majori, ovali, apice subtruncato. *Pedes* haud dilatati; tibiis apice haud calcaratis, tarsorum articulo basali sequentibus tribus majori.

Sectio A. *Ceratoderus.*

Corpus supra glabrum, nitidum. Palpi maxillares articulo 2ndo subovali, lateribus subparallelis. Prothorax cordato-truncatus. Tibiæ apicibus externe angulatis.

Sp. 1. *Ceratoderus bifasciatus*, Westw. Kollar. (*Paussus b.*)

Sectio B. *Merismoderus.*

Corpus supra opacum, plaga media elytrorum polita. Palpi maxillares articulo 2ndo fere rotundato, depresso. Prothorax bipartitus, lateribus angulatis. Tibiæ apicibus externe obtuse truncatis.

Sp. 2. *Merismoderus Bensoni*, Westw. (Pl. II. fig. 2.)

Luteo-fulvus, opacus, capite punctulato, supra impressionibus duabus rotundatis inter oculos alteraque versus medium marginis antici; prothorace bipartito, parte antica angulis anticis productis subacutis, parte postica quasi 4-lobata; elytris coriaceis, singulo versus medium plaga magna nigra irregulariter triangulari ad suturam haud extensa, disco nitidissimo maculaque parva communi nigra ad apicem suturæ, lateribus setulosis.

Long. corp. lin. 3.

Habitat in India orientali. D. Benson. Mus. Westw. and Hope.

"I took two specimens under a brick near the river Ganges, about fifty miles below Cawnpore, last year (1844), and this year (1845), in January, I took one under a stone, in a black ant's nest, between the Savalik range and Saharumpore." (Benson in litt.)

Fig. 2. *Merismoderus Bensoni*; 2 *a*, *b*, *c*, maxillæ in various points of view; 2*d*, labial palpus; 2*e*, portion of the hind margin of the antennæ; 2*f*, tarsus.

VI. *Description of another new Species of* Paussus, *from India, with Notes of other additional Species.* *By* J. O. Westwood, F.L.S., Sec. Ent. Soc., &c.

[Read 3d August, 1846.]

Notwithstanding all the exertions which I made to render my illustrated monograph of the *Paussidæ*, published in the second volume of the Arcana Entomologica, as complete as possible, it is surprising that, in the few months which have elapsed since the completion of that work, no fewer than eight distinct species require to be added to the list. Four of these have been described by Mr. Benson, in a paper published in the Journal of the Asiatic Society of Bengal.

Notices of the captures of these species have from time to time been read at previous meetings of this Society, in communications addressed to me by Mr. Benson; and as many members of the Society may not have the opportunity of consulting Mr. Benson's memoir, I here extract the short Latin characters which he has given of his four new species.

Sp. 1. *Paussus Baconis*, Benson.

(Section A. Prothorax quasi bipartitus.)

(Sub-sect. a. Antennarum clava postice haud excavata.)

P. livido-succineus; antennarum articulo basali, clavæ angulis margineque, prothoracis lateribus posticis, femoribus, podice, elytrorumque plaga magna communi, piceis; abdomine elytrorumque marginibus, tibiis tarsisque castaneis; antennarum clavâ obliquo-triangulari, basi emarginatâ, in spinam longiorem externe productâ, postice late impressâ, cavamine rugoso.

Long. $\frac{3}{20}$ poll.

Nearly allied to *P. rufitarsis;* but instead of the four short tufts of hair on each side, and two at the apex, the elytra are margined with long recurved spinous setæ, sometimes double, of which there are seven on each side, and a double row, with four in each row, at the apex of each elytron.

Taken by Dr. J. F. Bacon in the Debra Dhoon, at the foot of the sub-Himalayan range, between the Ganges and Jumna, on the 14th August, 1844, in a sweeping net, among grass and bushes, at the same time as a specimen of *Paussus pilicornis*.

Sp. 2. *Paussus Nauceras*, Benson.

(Section A.—Subs. b. Antennarum clava postice excavata.)

P. fusco-castaneus, prothoracis lateribus antice angulatis, parte postica elongatiuscula tenuiori picea; elytris thoraceque setosis illis elongatis, plagâ magnâ communi piceâ præditis; capite carinâ elevatiusculâ a clypeo emarginato egredienti usque ad nucham attingente; tuberculo ad verticem posito; clavâ antennarum naviformi, marginibus denticulatis, denticulis inferioribus setigeris; carinâ antice versus apicem subangulatâ, versus basin profunde emarginatâ quasi scissâ; tibiis mediocribus.

Long. $\frac{7}{30}$ poll.

Closely allied to *Paussus denticulatus*, Westw., Arc. Ent. ii. pl. 92, fig. 1. Taken by Captain T. Hutton, in July, 1845, at Green Mount, Mussoorie, on the underside of a leaf of nightshade. Another (apparently the opposite sex) was captured by Dr. Bacon on the 5th July, 1844, with a sweeping net, in grass, at Rockville, Landour, three miles from Green Mount.

Sp. 3. *Paussus ploiophorus*, Benson.

(Sect. A.—Subs. b.)

P. fusco-castaneus; abdomine elytrorumque disco nigris, politis, horum marginibus late castaneis; antennarum clavâ naviformi, fissurâ basali profundâ angustâ incisâ; cavaminis marginibus denticulatis, marginis inferioris denticulis setigeris; abdomine setarum brevium fasciculis duobus munito.

Long $\frac{2}{10}$ poll.

Size and habit of *P. denticulatus*, Westw., and intermediate between it and *P. nauceras*. Found drowned in a pool of water in February, 1845, by Dr. J. F. Bacon, at Moradabad in Rohilkhund, to the north of the river Ganges.

Sp. 4. *Platyrhopalus intermedius*, Benson.

P. rufo-castaneus; elytris angustioribus, singulo plagâ elongatâ triangulari irregulari ad latus externum prædito; antennarum clavâ mediocri, subrotundato-quadrato, margine postico undulato, versus basin late inciso, lingulâ acutâ armato; capitis fronte rotundato, clypeo minime emarginato, tibiis latis oblique truncatis.

Long. $\frac{3}{10}$ poll.

This species unites characters of three different forms—*P. angustus*, *P. acutidens*, and *P. Westwoodii*. Captured on the 28th of

March, 1845, at night, having flown to a light in a small bungalow on Dr. Benson's grounds at Saharunpore, the capital of a district at the head of the Doab.

In addition to these species another very interesting species from India, constituting a distinct sub-genus, was also forwarded to me by Mr. Benson, of which the characters (and an accompanying figure with details) were read by me before this Society a short time since (described in the preceding article).

Two new species of *Cerapterus* from Port Natal have been recently obtained by the Museum of Leipzig, of which (by the kindness of Dr. Schaum) I hope to be enabled to lay descriptions and figures before the Society; and lastly another new species of *Paussus* has within the last few days been received by the Rev. F. W. Hope from India, the description of which I now beg leave to lay before the Society.

Paussus Jerdani, Hope, MSS. (Pl. II. fig. 1.)

P. prothorace quasi bipartito; antennarum clavâ postice valde excavatâ; capitis vertice excavationibus duabus ovalibus; tuberculo elevato in singula excavatione; rufescens, obscurus, undique setulis minimis luteis obtectus; elytris setis longis numerosis rufescentibus marginatis, his etiam plagâ maximâ posticâ nigrâ notatis.

Long. corp. lin. 3.

Habitat in India orientali.

In Mus. D. Hope.

This species is most nearly allied to *Paussus Boysii*, *Stevensianus*, and especially to the well known *P. thoracicus* of Donovan. Its general colour is an obscure red, the anterior portion of the prothorax and the base of the elytra being of a more fulvous colour. The head is narrowed in front of the eyes, the front part terminating in two slightly rounded and flattened divisions, the incision between which is angular and terminates in a shallow channel or impressed line, which extends to the crown of the head, where it terminates in two deep oval impressions, placed rather obliquely to each other, and each having a raised tubercle within. The club of the antennæ is also triangular, with the front margin acute and slightly arcuated, rounded off to the tip; the hinder or upper margin is very deeply excavated, the excavation of an oval form, with each side sulcated; the maxillary palpi have the second joint flat and broadly ovate, truncated at the tip, the two terminal joints

small, the maxillæ are very thin and semitransparent, terminating in two deflexed hooks. The prothorax is quasi-bipartite, the anterior part very slightly broader than the head, with the lateral angles acute; it is dilated behind in the middle, and has a longitudinal depression in the centre, not reaching to the anterior margin; the hind part has the lateral portions elevated and of a blackish colour, with a small patch of fulvous hairs in front: the centre of the prothorax is deeply impressed, the hind central portion forming two lobes rounded in front. The elytra have a large black patch, occupying at least half of the hinder portion of the disc, leaving a narrow rufescent margin; they are margined with numerous long reddish bristles, both along the sides and posterior margin; the podex is also similarly margined with shorter hairs. The femora are pitchy, and the remainder of the legs reddish; they are comparatively short and stout, without any marked distinction between them in size or thickness. The basal joint in all the tarsi is minute. The entire insect is destitute of gloss on the surface; it is very obsoletely punctured, but it is clothed throughout with very minute luteous setæ.

Fig. 1. *Paussus Jerdani;* 1*a*, maxilla; 1*b*, maxillary palpus in another position; 1*c*, antennæ; 1*d*, leg.

VII. *On the Gall formed by* Diphucrania auriflua, Hope, *a Species of* Buprestidæ. *By* W. W. Saunders, Esq., F.L.S.

[Read 7th February, 1847.]

(Pl. II. figs. 5—9.)

Mr. Wm. Stephenson, while resident at Sidney, New South Wales, discovered a kind of excrescence or gall on the branches of Pultenæa stipularis, and having obtained several for examination, it became evident to him that they were caused by the larva of a small *Buprestis*, which I find to be the *Diphucrania auriflua* of Mr. Hope (Pl. II. fig. 9). Mr. Stephenson, supposing this fact to be new to Entomologists, kindly forwarded to me a series of the galls, containing both the perfect insect and the larva, from which I have been enabled to draw up the following account, which I beg leave to lay before the Entomological Society. To allow me to see the insect in its various states Mr. Stephenson immersed the galls soon after obtaining them in boiling water, by which means the vitality of the insect was destroyed, and by cutting the galls open I was able to take out both larva and imago,

much in the same state as when procured by Mr. Stephenson in New South Wales. The galls when full grown vary from $\frac{2}{3}$ inch to 1 inch in length, are of an oval shape, and in all the specimens which I have seen are broader than the branch on which they are formed. They usually occur singly, but occasionally two are found together as shown in Pl. II. fig. 5. Externally they are of a reddish brown colour, somewhat resembling the colour of the bark of the plant which nourishes them, and present a rather rough warty appearance. The anterior of the gall appears to be a spongy mass of woody fibre, with an external covering of wood in its natural state. Various irregular passages run through the spongy portion of the interior, extending as far as the centre of the branch, near which in advanced galls an elongated chamber will be perceived, in which the larva changes to the imago state. When this change takes place, the perfect insect eats its way out of the gall, making a rounded aperture for its exit, as shown in the upper gall of fig. 5. The larva (fig. 8) is apodal, about $\frac{4}{10}$ inch long, nearly cylindrical, and 13-jointed. The forepart of the body is abruptly truncate, with the first two joints smaller than the third, which is about as broad as the tenth, the intermediate ones being somewhat narrower; the remaining joints form a rounded termination to the body, the last joint being small and somewhat bifid. On the back the joints are depressed in the centre, by a channel which runs longitudinally from the head to the other extremity. The parts of the mouth are small and of a dark brown colour. The general colour of the larva is a brownish yellow or horn colour. Mr. Stephenson says he found the larva in the month of June, which answers to the month of December in this country. The perfect insect, I should suppose, appears in the spring or early summer of New South Wales, but Mr. Stephenson has given me no information on this point. It appears to be common in the neighbourhood of Sidney. To illustrate the economy of this gall-forming *Buprestis*, I have figured three galls as they appear on the branches of the Pultenæa, as well as sections of two other galls, to show their internal formation. From one section (fig. 6) a larva was taken. From the other section (fig. 7) a perfect insect was obtained. I have also given in fig. 8 as correct a representation of the larva as my means would allow, for I think it necessary to state that the foregoing description of the larva, as well as the figure, were both taken from a specimen in the dried state, but in such good preservation that I think both will be found very near the truth.

VIII. *Description of a new Species of* Paussus, *from Southern Africa. By* J. O. Westwood, F.L.S., &c.

[Read 5th April, 1847.]

Genus Paussus, Linn.

(Section A. Prothorax quasi bipartitus.)
(Sub-sect. b. Antennarum clava postice excavata.)
(** Species Africanæ.)

Paussus Parrianus, Westw. (Pl. II. fig. 3, and details.)

Paussus testaceus; elytris nigris, basi apiceque testaceis exceptis; antennarum clava naviculari, margine postico subserrato, margineque infero excavationis integro; prothorace subbipartito.

Long. corp. lin. $2\frac{1}{2}$.

Habitat Port Natal.

In Mus. Parry et Westwood.

Corpus parvum, vix punctatum, tenuissime setulosum. Caput latitudine prothoracis, vertice plano, vel potius subconcavo, margine antico parum elevato, et in medio emarginato; margine postico etiam subelevato; subito in collum postice contractum. Palpi maxillares articulo 2ndo magno subovali, apice interno haud porrecto; palpi labiales articulo apicali subinflato. Antennæ longitudini capitis et prothoracis equales, clava subelongata subcurvata, basi postice in cornu rectum producto, margine antico satis acuto; postico subtus excavato, margine supero excavationis 5-impresso, margine ejus infero integro simplice; apex clavæ antice rotundatus, postice vero subangulatus. Prothorax nitidus, sub-bipartitus; parte antica lateribus angulato-productis et subacutis, discoque in tubercula duo rotundata elevata producto, parte postica angusta, disco carinis elevatis literam W simulantibus, instructo. Elytra coriacea, parum setosa, nigra, subopaca, basi (cum scutello) margine tenui laterali apiceque (cum tuberculo ad angulum externum) rufo-testaceis. Pygidium rufo-piceum, semicirculare, lateribus carinaque mediana subelevatis. Corpus subtus testacco-rufum, tenue punctatum, pedibus concoloribus, gracilibus; tibiis subangustis, calcaribus minutissimis, tarsorum articulis 4 basalibus longitudine fere æqualibus.

Fig. 3. The insect magnified; 3*a*, maxillary palpus; 3*b*, labial palpus; 3*c*, 3*d*, antennæ, from below and above; 3*e*, apex of tibia and tarsus.

This new species belongs to the African subdivision of the *Paussi*, which possess a subbipartite prothorax and an excavated clava to the antennæ; although its general appearance bears a much nearer resemblance to some of the Asiatic species, especially *P. Fichtelii* and *thoracicus*. The flattened crown of the head, with the posterior and anterior margins somewhat elevated and acute, distinguish it from all the African species to which it is nearest allied. From *P. ruber* and *cochlearius* it is further distinguished by the more linear clava of the antennæ and the black disc of the elytra; the former character, narrower feet, and ferruginous colour, distinguish it from *P. excavatus*, whilst the narrower posterior part of the prothorax, and the structure of the antennæ and feet, distinguish it from *P. Klugii* and *Latreillii*. These four African species are represented with their details upon one plate in my "Arcana Entomologica" (vol. ii. pl. 91), so that the distinctions of the species are apparent at a glance. Having been indebted to Captain Parry for my acquaintance with this interesting insect, it is with much pleasure that I have dedicated it to him, as a slight return for the many opportunities which he has afforded me of examining portions of his valuable collection.

Shortly after the preceding description was read before the Society, Mr. Benson arrived in England, bringing with him specimens of *Paussus Parrianus*, which he kindly communicated to me, with the following

Notes on the Capture of Paussi, *at the Cape of Good Hope, by W. H. Benson, Esq.*

25th April, 1846. Under a stone at Camp's Bay, on the western face of Table Mountain, I captured a species of *Paussus Burmeisteri*, Westw., which stained my finger when seized, as I had observed its congeners do in Hindustan. It was surrounded, and at first screened from view, by small brown ants, some of which were winged. Westwood notes that Hope's and Westermann's specimens have no appendages to the abdomen; mine has two diverging spines set a little apart, near the middle of the podex, underneath.

8th June. Between the end of Hope Street, Cape Town, and Table Mountain, and on the skirts of the Devil's Peak, discovered under a stone, near a rill, and in rather a moist spot, eight specimens of the *Paussus*, since called *Parrianus* by Westwood, from a specimen from Port Natal, and which a reference to the monograph in the "Arcana" showed to be undescribed. They were

among crowds of ants, some on the under face of the stone, others in the ruins of the ants' nests. Several of them crepitated and stained my fingers.

13th June. Two more specimens of *Paussus Parrianus*, among ants, under the loose bark of a felled and decaying oak tree, on the eastern base of Table Mountain, and by the side of a lane running from Newlands towards Protea and Hout Bay.

15th June. Two other specimens on the same log. These were undisturbed during my previous search, as fatigue prevented my stripping off the whole of the bark. The whole of these captures were made upon crutches, during short explorations in places to which a wheeled carriage could convey me. My success, under such circumstances, shows what might be done in the locality by an active collector.

26th June. Three specimens among ants again, under the bark of a felled fir-tree lying near the same spot.

29th. A single specimen, under a stone, near the spot where I made my first capture. It inhabited a formicary like the rest, but this was the first instance in which I found this gregarious species unassociated with another of its own kind.

7th September. While searching on the skirts of the Devil's Peak, near the third milestone between Cape Town and Rondebosch, for specimens of *Graphipterus 3-lineatus*, Dejean, I found under a stone, with its usual companions, my 17th specimen of *Paussus Parrianus*, and on the 21st September I obtained three more under similar circumstances near the same spot. It is singular that a species, comparatively so abundant, should so long have eluded the search of entomological visitors to the Cape, more especially of Thunberg, who brought *P. lineatus* and *ruber* thence.

The abundance of specimens creating an indifference regarding the chance of losing specimens not at once secured and set, enabled me to keep some alive for a time to observe their habits. In so doing, I discovered at least one use of the singular club of the antennæ: these beetles, when thrown on their backs on writing paper, were, from their flatness in that part, and the shortness of their feet, unable to turn themselves over, until, by turning an antennæ back, making the joint rigid, and using the club as a lever, they throw themselves sufficiently over on one side to gain their feet. When I deprived them of the assistance of their antennæ, by placing them with their heads beyond the edge of the paper, their struggles to regain their proper position, by means of their feet alone, were ineffectual. A club composed of many

loose joints would have been useless, and the attempt to render each individual joint rigid would have been fatiguing to the muscles.

I could detect no sexual distinctions in *Paussus Parrianus* in external appendages. The specimens vary much in size, and one variety has very little dark colour on the elytra.

A letter from Dr. Bacon received to-day tells me that he has taken two more new *Paussi;* one on the 17th April, in the clutches of an ant, the other on the 13th May, flying. The first, he says, is certainly quite new; the second, he says, comes nearest to *P. denticulatus.* His collection of species, in all the orders, amounts now to 3716, of which 2103 are *Coleoptera.*

IX. *Descriptions of some new Species of Exotic* Cetoniidæ. *By the* Rev. F. W. Hope, F.R.S., &c.

[Read 5th January, 1846.]

Sp. 1. *Diplognatha Herculeana*, Hope. (Pl. IV. fig. 1.)

Affinis *D. gagati,* Olivier, at multo major. Tota atra, nitida, clypeo truncato, reflexo; thorace fere in medio binis punctis elevatis notato; elytra glaberrima, absque striis punctisque ullis. Sternum in mucronem obtusum productum. Pedes nigri, pilis nigris tibiisque dentato-spinosis.

Long. lin. 15, lat. lin. 8.

Habitat circa Palmas, in Africa tropicali occidentali.

In Musæo Dom. Hope.

Received in the year 1845 from the Rev. T. Savage of Cape Palmas. Mr. MacLeay has, I think, very properly considered *gagates*, Fab., as typical of his subgroup *Gagatesiæ*. (Vid. Illustrations of Annulosa of South Africa, iii. 22.) Dr. Burmeister has united *Cetonia Hebræa*, of Olivier, with the same genus; I am inclined, however, to place *Hebræa* with other species in a subgenus, as they differ in form and colouring, and cannot properly be ranked under *Gagatesiæ*. To the former group belong *Silicea* of MacLeay, *pectoralis* of Bainbridge, and the typical *gagates*. *Campsiura*, with which Burmeister seems inclined to place it, is quite another form.

Fig. 1*a*, mandible; 1*b*, maxilla; 1*c*, mentum; 1*d* and 1*e*, mesosternal process.

Sp. 2. *Diplognatha ornatipennis*, Hope. (Pl. IV. fig. 2.)

Atra, clypeo fere quadrato, disco excavato, antennis nigro piceoque colore tinctis. Thorax ater, lateribus flavis, in medio binis lineis concoloribus, antice posticeque haud ad marginem extensis, binisque aliis irregularibus inter marginem et lineas thoracis positis. Elytra nigra, fasciâ aurantiâ irregulari conspicuâ. Podex flavo-pilosus. Corpus infra nigrum, nitidum, aurantioque colore sparsim variegatum, pedibus concoloribus.

Long. lin. $12\frac{1}{4}$, lat. lin. $5\frac{1}{4}$.

Habitat circa Palmas.

In Musæo Dom. Hope.

I feel inclined to place the above beautiful species in the second section of *Diplognatha*, along with *Hebræa* of Olivier and others.

Fig. 2 *a*, maxilla; 2 *b*, mentum; 2 *c* and 2 *d*, mesosternal process.

Sp. 3. *Cetonia rubro-cincta*, Hope. (Pl. IV. fig. 3.)

Atro-olivacea, clypeo obscuriori. Thorax concolor, marginibus externis elevatis et obscure rubro-marginatis. Scutellum margine omni rubro colore tinctum. Elytra nigro-olivacea, limbo lato rubro inquinata, punctaque varia alba ad inferiorem partem disci sparsim apparent. Corpus infra viride, nitidum. Pectus parvâ maculâ nitet et segmenta abdominis variant maculis albis duplici serie dispositis. Podex in medio ruber, lateribus viridibus, punctisque quatuor albidis minutis variegatus. Pedes supra et infra nigricantes.

Long. lin. $8\frac{1}{4}$, lat. lin. 5.

Habitat circa Palmas.

In Musæo Dom. Hope.

I received the above insect from Cape Palmas. It is subject to considerable variety, and it is doubtful if the red margins may not be accounted for by immaturity. In many specimens also the white punctures are wanting. Other individuals present merely a dark olive colour without any variation.

Fig. 3 *a*, maxilla; 3 *b*, mentum; 3 *c* and 3 *d*, mesosternal process.

Sp. 4. *Glycyphana æruginosa*, Hope. (Pl. IV. fig. 4.)

Læte viridis, opaca, capite nigro-punctato, apice emarginato. Thorax undique vel lateribus tantum flavo-marginatus sparsimque punctatus. Elytra læte viridia, opaca seu æruginosa,

marginibus flavis, maculisque parvis concoloribus post medium disci positis. Podex convexus, circulariter striolatus, punctisque tribus albis in triangulum positis alterisque duobus lateralibus. Corpus infra olivaceo-viride, nitidum, pectore albo-punctato, segmentis abdominalibus striolis transversis albis in quadruplici serie dispositis. Pedes nigri, femoribus et tibiis duobus posticis testaceis.

Long. lin. $5\frac{3}{4}$, lat. lin. 3.

Habitat circa Cap. Palmas.

In Mus. D. Hope.

Received from Dr. Savage of Cape Palmas. Closely allied to *Glycyphana impar* of Gory and Percheron, pl. 56, fig. 2, [of which it may possibly be a variety], differing in the colour of the head, destitute of spots as well as the disc of the thorax. It is also closely allied to *Cetonia cincticollis*, Hope, (Annals of Natural History, August, 1842,) also from Cape Palmas, but that is at once distinguished by the minute white spots on the elytra, and by the transversely striolated pygidium.

Fig. 4 *a*, maxilla; 4 *b*, mentum; 4 *c*, anterior tibia.

Sp. 5. *Macronata stictica*, Hope. (Pl. IV. fig. 5.)

Nigra, clypeo fortiter emarginato et punctato. Thorace concolori, punctis quibusdam minutis ad latera positis. Elytra aterrima, lineis elevatis conspicua variisque minutis punctis per totum discum sparsa. Corpus infra nigro-violaceum et punctatum, sterno acuto, ultra pedes anticos extenso. Segmenta abdominis utrinque postice lineis albidis notata. Pedes atri.

Long. lin. 7, lat. lin. $3\frac{1}{2}$.

Habitat in agris Mysoriensibus.

In Mus. D. Hope.

This remarkable species is evidently the type of a subgenus pertaining to *Macronata;* it was received by me from the Mysore country during the past year.

Sp. 6. *Cœlorhina guttata.* Olivier.

The accompanying figures, 6*a* and 6*b*, contain representations of the head of the ordinary specimens of the males of this fine species, seen from above and sideways, in order to show the distinction exhibited by another remarkable specimen which I received from Dr. Savage at Cape Palmas, which has the two

anterior horns of the clypeus united together. The upper side of its head is represented in figure 6*c*, and its side view in 6*d*.

Figures, with the necessary details, are also added, of three other interesting species not previously sufficiently known :—

Sp. 7. *Cetonia propinqua*, Hope. (Pl. IV. fig. 7.)

This species, figured by Messrs. Gory and Percheron (Mon. Cet. pl. 51, fig. 3), from my collection, has been referred, by Mr. MacLeay and Dr. Burmeister, to *Genyodonta umbonata*. It is, however, quite distinct, belonging in fact to a distinct subfamily of *Cetoniidæ*, being in several respects most nearly allied to *Trichostetha fascicularis* and *capensis*, but forming the type of a distinct subgenus.

The unique specimen in my collection is a male, having the four basal segments of the abdomen with a slender longitudinal channel.

Fig. 7*a*, represents the insect of the natural size ; 7*b*, the maxilla ; 7*c*, the mentum ; 7*d*, the clypeus; 7*e*, the fore tibiæ ; 7*f*, the prosternal tubercle seen sideways ; 7*g* and 7*h*, the mesosternal process.

Sp. 8. *Clinteria tetraspilota*, Hope. (Pl. IV. fig. 8.)

This species, first described by me in the Transactions of the Zoological Society, comes very near to *Clinteria imperialis* of Paykull, of which there are specimens in the British Museum. The species is unique in the collection of Colonel Sykes, and unfortunately wants the head. It is a native of the East Indies.

Fig. 8*a* and 8*b*, represent the mesosternal process.

Sp. 9. *Diplognatha admixta*, Hope. (Pl. IV. fig. 9.)

This species, concisely described in the Annals of Natural History for August, 1842, inhabits Cape Palmas.

The specimen appears to be a male, having the middle of the abdomen flattened but not longitudinally impressed.

Fig. 9*a*, represents the clypeus ; 9*b*, the maxilla ; 9*c*, the mentum ; 9*d*, the fore tibiæ ; 9*e* and 9*f*, the mesosternal process.

X. *Description of Two new Exotic Species of the Genus* Papilio. *By* J. O. Westwood, F.L.S., &c.

[Read 7th December, 1846.]

Sp. 1. *Papilio Erostratus*, Westw. (Pl. III. figs. 2, 2*.)

P. alis supra viridi-nigris, omnibus incisuris albidis, posticis acute caudatis et denticulatis serieque submarginali lunularum 7 albidarum; subtus viridi-fuscis, posticis pone medium maculis 7 nigris, nonnullis rufo-guttatis, serieque submarginali macularum parvarum roscarum, thorace fulvo maculato.

Expansio alarum anticarum unc. $4\frac{1}{2}$.

Inhabits Central America. In Mus. Becker.

Allied to *Papilio Acamas*. The upper surface of the wings is of a dark greenish black colour, with the incisures strongly marked with whitish buff; the hind wings have a rather long slender tail, the denticulations, especially those between the tail and the anal angle, being acute; near the outer margin of the hind wings is a row of seven whitish buff lunules, very slightly irrorated with rosy scales. The under surface of the wings is of a greenish brown colour, the fore wings having a portion of the anterior margin irrorated with buff and fulvous scales, and near the inner angle of the wing are a few short oblong spots of the same colour, very near to the outer margin; the hind wings have a series of seven black spots beyond the discoidal cell, most of which (but especially those next the anal margin, which are the largest,) are irrorated with carmine scales or dots, and halfway between this row and the outer margin of the wings is a row of small pale carmine-coloured lunules, the one nearest the anal angle being duplicated and preceded by a black patch uniting it with the spot above. The neck and sides of the body are spotted with fulvous.

Sp. 2. *Papilio Zetes*, Westw. (Pl. III. figs. 1, 1*.)

R. alis fuscis, supra fascia maculari fulva, ex angulo anali fere ad apicem anticarum extensa, maculis in alis posticis majoribus et magis fulvis; anticis subtus macula trifida in apice areæ discoidalis; macula triangulari costali, fasciaque maculari albida; posticis fascia media lata argentea (venis fuscis divisa) serieque submarginali irregulari macularum rubrarum

quarum quatuor majoribus in plagas totidem argenteas dilatatis, collo et thorace fulvo-maculatis.

Expansio alar. antic. unc. $3\frac{1}{2}$.

Habitat in Insula St. Dominici Indiæ occidentalis. In Mus. D. Hearne et Hope.

The upper surface of all the wings is of a rich brown colour, the incisures slightly marked with pale buff; the tails of the hind wings of moderate length, and narrow; the fore wings have a few buff scales, forming several slight patches near the extremity of the discoidal cell, a macular fulvous fascia runs from near the apical angle of the fore wings almost to the anal angle of the hind ones, the spots on the hind wings being largest, and extending nearly to the discoidal cell, and of a richer fulvous colour; the one nearest the anal margin is narrow and curved.

The fore wings on the under side have the macular band pale buff, and a trifid pale yellow spot near the extremity of the discoidal cell, beyond which is a subtriangular costal spot divided by the adjacent nerves. The hind wings have a broad row of six silver spots running across the middle, just beyond the discoidal cell, the costal area with a yellow dash and a pale buff irregular spot near the anal margin; at a short distance beyond this silvery fascia is a row of seven red transverse spots, four of which are dilated into triangular silvery patches extending outwardly; the pale buff incisural marks are large and triangular.

The head has two small white dots between the eyes, and the neck has two rows of four small fulvous dots; the sides of the thorax beneath the wings are also spotted with fulvous, and the abdomen has four longitudinal streaks of the same colour.

This beautiful species was brought from St. Domingo by John Hearne, Esq. F.Z.S., &c.

XI. *Descriptions of some Species of the Lepidopterous Genus* Oiketicus, *from Ceylon.* *By* Robert Templeton, Esq., R. A. (in a Letter addressed to J. O. Westwood.)

[Read 6th April, 1846.]

"*Tertia species, ni fallor, mox describenda.*"—
Rev. L. Guilding, Linn. Trans. xv. p. 375.

About fourteen months ago, while searching a stunted bush (*Citrus decumana*) for caterpillars, I observed, depending from one of the branches, a singularly formed cocoon, whose mode of attachment excited my attention. I brought home the branch and placed it in one of my breeding boxes, the lid of which was formed of glass. After a few hours, happening to pass, I was surprised to find that the cocoon had left the place where I had deposited it, and had become attached to the glass, a fine thread from the tail still, however, connecting it to the branch. I anticipated the possession of a gigantic *Psyche*, but after a little time I recollected that I had met with a somewhat similar cocoon figured somewhere in the Linnæan Transactions, and on searching found the paper of the Rev. L. Guilding, which left me without a doubt of its being a new "*Oiketicus*." Taking another peep into the box I found my new acquaintance with its head out, and perceived that it corresponded exactly with the figure given in his plate 2, in form, and nearly in size (fig. 6), but differed slightly in the dark markings on the head. The mode of marching along the glass was very curious: swinging its head from side to side, it attached by its spinnerets twenty minute threads, a quarter of an inch long, to the glass; it then hooked its fore claws into the loop, advanced a step and begun another set 0·2 from the former; in this way it marched about three inches in half an hour, reaching the wooden side of the box, across which it descended by a precisely similar course of operations: when disturbed it immediately retired within the cocoon, the funnel-shaped membrane or hood, attached to the more rigid front of the cocoon, closing up the mouth; when it has advanced to such a distance that the fine thread which steadies the smaller extremity or tail becomes too much tightened to permit a farther stretching, it is disengaged and a new attachment formed to some other body, usually a leaf or fine twig, which will yield an inch or two without the thread breaking. I supplied fresh leaves (*C. decumana*) every day; in about two weeks I found it attached to the glass by the extremity

of the hood, a numerous set of fine lines radiating from its flocculent edges, and attaching themselves and it to the glass. In this state it remained about two months, when I noticed an unusual bustle in the box, and found, on examination, a most active little creature just emerged from the case; he was dashing about as if mightily impatient of the narrow limits put to his excursions, lashing his long tail about with much vivacity. Before I could secure him he had injured himself much against the twigs, leaves and sides of the box, but fortunately not sufficiently to obliterate the characteristic markings on the wings. I transferred him to my insect case, and named him in compliment to Mr. Guilding's prophecy,

Oiketicus tertius. (Pl. V. fig. 1.)

Body purplish black, covered with very coarse longish hairs. Abdomen dark brown with lateral tufts. Antennæ brown; basal half pectinated. Anterior legs with strong marginal hairs; tarsi and hinder legs nearly naked. Wings dark grey, elongate, covered with coarse pulvinuli, a black triangular dash in the centre, with two smaller, less distinct in a line, towards the tip. Posterior wings securiform, triangular, concolorous. It belongs to same division with *O. Kirbii.*

In May last I received from my friend Mr. F. Layard another cocoon of larger size, which he found on a cinnamon bush; I supplied the inmate with leaves of different kinds, but could not discover any that it would touch. It soon attached itself to the glass, and has remained there ever since.

In July last Mr. R. Dawson brought me from his coffee estate in Saffragam a large female nearly of the size of the magnified figure in plate 2 (Lin. Trans.): it was found on the leaf of *Delima sarmentosa.* The case is singular, being composed of a little bundle of sticks placed parallel to each other, one inch and a half long, twelve in number, tied together by a few fine threads wrapped round the whole at the top, and a similar set at the bottom, and interiorly connected by threads, which form the outer envelope of the soft silky cocoon in which the animal resides; the expansile neck is precisely similar to that described above. Before I could get a drawing taken, she had attached herself to the glass permanently, and I have been afraid to touch it since. I am satisfied it is a female, from an account given me of the whole process of sexual intercourse with a male, by Mr. F. Dick, on the authority of his superintendent, who had observed them more than once.

I expect specimens from this gentleman. It is from size and the brilliant yellow colour of the head and first rings unquestionably a new species.

In August I found on another pamplemos bush two more cocoons resembling nearly exactly those of the male described, but rather smaller and more conical. One of them came out on the 22d of October, warm moist weather, and I got, but much injured, the following species, which, from its agreeing so closely with *O.* (*Cryptothelea*, Duncan) *Maclcayi*, I have named,

Oiketicus (*Cryptothelea*) *consortus*. (Pl. V. fig. 7.)

Body brown, covered with coarse longish brown hairs, abdomen brownish, nearly naked, last annuli yellow, with dark margins; anterior legs with marginal brown hairs; posterior nearly naked; middle intermediate in this character; antennæ pectinate to the tip, dark brown. Wings uniform brown, broad.

Plate V. fig. 1, *Oiketicus tertius*, natural size; fig. 2, cocoon; fig. 3, pupa case; fig. 4, exhibiting the ribbed appearance of a ring; fig. 5, male suspended at rest; fig. 6. cocoon of *Oiketicus consortus;* fig. 7, *O. consortus* natural size; fig. 8, case found *Delima sarmentosa*.

XII. *Remarks on the Habits and Economy of a Species of* Oiketicus *found on Shrubs in the Vicinity of Sydney, N. S. W. By* W. W. Saunders, Esquire, F. L. S., &c. *Drawn up from Notes furnished by* W. Stephenson, Esq.

[Read 1st February, 1847.]

The larvæ are enclosed in a silken case, fortified on the outside with pieces of stick of various lengths, generally about half an inch on the main part, but towards the lower end there are usually a few from one to three inches in length, in the centre of which the lower end of the silken case protrudes free from the sticks, and is very flexible. Through this aperture the larva discharges its excrement and exuviæ. The upper or head extremity of the case is a beautiful tissue of soft silk, forming a tube half an inch in width, through which the larva emerges to feed and change its position. It frequently comes out half its length, but most commonly only protrudes its six true feet and the four first segments

of the body. It generally takes the precaution to attach a portion of the side of the mouth of the tube to the branch upon which it is feeding, and when any thing touches it unexpectedly, it immediately and with great celerity recedes into the case, drawing in the flexible part of the tube after it, and contracting the aperture so as to exclude all enemies. The larvæ of the largest cases are about three inches in length and half an inch in diameter. The abdominal and anal feet are mere circles of small points or hooks with which it moves in the case, taking hold of the beautiful silken lining, to which it can adhere with great pertinacity. The cases are found suspended on various shrubs, such as the different kinds of *Leptospermum*, *Melaleuca*, &c. at all seasons, and are very conspicuous. Previous to changing into the pupa state, the larva firmly fixes itself with silken fibres to some branch or paling, drawing together and permanently closing the head opening. It then reverses its position in the case, and envelopes itself in a beautiful soft silken cocoon of a yellowish white colour. On opening a considerable number of cases I found the insect in various stages of growth in June. The pupa of the largest cases are about two inches in length and half an inch in diameter, and are of a dark chesnut colour. Those of the smaller cases are darker, inclining to black, with the abdomen much attenuated, and about one inch and a half in length. The former are females, the latter males.

Notwithstanding the extraordinary care bestowed upon the larvæ to protect them from enemies, I have many examples of the depredations of a parasite, and an ichneumon has appeared in more than one instance.

August 30. On this day I first observed a yellowish white substance protruding at the lower end of the largest cases, which upon close examination proved to be a portion of the females in the imago state, one-third of their bodies being exposed. About an hour afterwards, examining the cases again, I found the females had receded, and in opening a case the female moth became evident within, and thus they emerge and recede as occasion may require. The female is a large apterous moth, with very little of the ordinary appearance of an insect of the moth kind. The length is about $1\frac{3}{4}$ inches, diameter full half an inch, colour yellowish white, fawn or buff. Head and three first segments of the body naked and glossy on the upper part. Feet very short. Antennæ none, or at least not visible to the unassisted eye. Anal segment of the body clothed all round with a dense covering of silky down

of a deeper colour than the rest of the body. Ovipositor well developed.

September 5. Examined some of the females, no males having yet appeared. Two or three were dead; one nearly so, having deposited a great number of ova within the pupa case, which were enveloped in a short silky material. When the female has deposited all her ova, she is literally nothing but thin skin, which soon desiccates, leaving room for the young larvæ to pass. I have examined other species of *Oiketicus*, and find all the females are apterous.

September 20. A male imago appeared this morning; it had been in active operation a good while, as evinced by its wings, being much broken at the tips and otherwise much abraded. It is an insect of very peculiar construction, and seems to have some affinity with *Zeuzera*. It has the extraordinary power of extending the abdomen to two inches in length, and of turning and twisting it in all directions. When in this state it has alternate rings of black and yellow, with a curious appendage at the extremity. The male appears very eager to accomplish the grand object of nature, namely, the continuation of its species, as its existence appears to be of short duration. The large fat or rather distended females have not room to turn their bodies so as to present the generative organs conveniently to the male, consequently the immense development of the abdomen in the males is of the greatest importance; but it appears very extraordinary that the head of the female should be inverted, when it is known that she never emerges from the case unless by accidentally falling therefrom, which position obliges the male when in the act of coition to stretch his abdomen all along the side of the female full $1\frac{3}{4}$ inches. This peculiarity appears to me to be the design of the all wise Creator in order to afford a secure place for the defenceless larvæ, viz. that of the pupa case of their parent, from which they emerge after the disappearance of their mother's body, and immediately form themselves silken cases covered with small pieces of any thing they can procure, arranged in every respect like the larger ones.

The foregoing interesting details were forwarded to me by Mr. W. Stephenson, and as they refer to an insect which appears to be undescribed I shall here give a short character of the species to enable future observers to identify it. I shall retain it in the

genus *Oiketicus* for the present, although I feel convinced that the genus *Oiketicus*, as established by Mr. L. Guilding in the Linnæan Transactions, will not properly admit the so called species of *Oiketici* from New South Wales and our East Indian possessions. Indeed Mr. E. Doubleday has already created a subgenus for one (*Thyridopteryx*, Stephens) of the clear winged species from Western Australia, in the propriety of which I fully concur.

Oiketicus elongatus, W. W. S.

Male.—Head rufous brown, with the eyes black. Antennæ short, of the same colour. Thorax black, with the anterior half rufous brown. Wings sooty black, with the nervures hyaline; the anterior pair long, narrow, and sharp pointed, the posterior pair about two-thirds the length of the anterior. Abdomen black, tipped with rufous brown, occasionally much elongated, when it appears as if it were black and brown banded. The brown bands are occasioned by the membrane of the abdomen showing itself at the joints. Legs anterior pair rufous brown, the two posterior pairs black. Tarsi black.

Expansion of wings 2 inches.

Abundant about Sidney, New South Wales.

In the Collections of the British Museum, W. W. Saunders, &c.

Female.—Apterous, cylindrical, of a yellowish brown or fawn colour. Head and three first segments of the body naked and glossy above; anal segments covered with silky down of a deeper colour than the rest of the body.

Length $1\frac{3}{4}$ inch, diameter $\frac{1}{2}$ inch.

In the Collection of W. W. Saunders.

XIII. *Notes upon Ceylonese* Lepidoptera. *By* Robert Templeton, Esq., R.A.

[Read 5th October, 1846.]

The lime trees in Ceylon are occasionally nearly destroyed by the caterpillars of the true *Papilionidæ*, namely, *Papilio Polymnestor*, *Pammon*, *Polydorus* and *Hector;* but most particularly by the caterpillars of *P. Pammon*, which strips the trees completely, but this is rare. Very many other *Lepidoptera* feed likewise on the genus *Citrus*, but do no harm as far as I have observed. I have both sexes of *P. Mutius*, the females are larger and the markings more developed. I have plenty of *P. Polydorus* and also *P. Polytes*. I have both sexes of *P. Pammon;* the male has a little white mark near the anal angle of the posterior wing; the female an ocellus exactly resembling that of *P. Polytes;* all the other markings are the same in both, except in the females they are larger and longer. One half of my specimens of *P. Crino?* have the green band exactly divided by the closing nerve of the discoid area; in the remainder it is broader and quite clear of the nerve, but there is no other distinction that I can observe either in the ocellus of the posterior wings or in the lunules; the latter variety has the abdomen rather larger and I suspect it to be the female. The male of *P. Epius* is without the blue lunule, the female has it; and both sexes vary in having or not having one or two spots outside the closing nervure of the discoid cell of this lower wing; beneath, the markings in both are nearly identical, lunule and all. I have a *Diadema* intermediate between *Bolina* and *Auge*, the female of which has the apical angle of the same colour as the rest of the wing, traversed by black veins. I believe the brown specimens of *Cethosia* to be the males, as the large blue ones have much the most tumid bodies. I have a new beautiful *Limenitis?* near *Procris*, dark purple velvet, paler at the margins of the wings, with red patches across the discoid area, and white spots in a curved fork near the apex; hind wings with a double row of black spots along the exterior margin band with crimson towards the exterior angle, and a similar dot behind the anal one; all the spots are crimson beneath except the white ones. *Charaxes*, Nos. 104 and 105, are certainly sexes of the same species, the latter I think the male;* the pupa case is nearly globular, and is

* No. 105 is *Charaxes Bernhardus*, No. 104 is *Charaxes Psaphon*, Westw. Cab. Orient. Ent. pl. 21, fig. sup.

represented in plate V. fig. 9, a section of it being figured in fig. 10. Of *Polyommatus* I have twelve species, or very distinct varieties; of *Thecla* twenty-five, some very distinct and beautiful. Of some genera of minute *Lepidoptera* I have beautiful series, especially of the *Pyralidæ;* and of the china-marks, and their allies, some very handsome species.

It may be worthy of notice that if a *Centipede* be mutilated by a blow which only half kills it, after its death it contracts in length to a very great degree, whence I was formerly led to believe this to be a specific peculiarity. I may also add, in correction of a previous remark of mine, that I now possess numbers of the cast skins of the Ceylonese species of *Phrynus*.

XIV. *Notes on Indian* Lepidoptera. By Captain Thomas Hutton. In a letter addressed to J. O. Westwood, Esq.

[Read 5th October, 1846.]

Mussooree, 26th June, 1846.

My dear Sir,

Your letter was duly received, and I would long ere this have answered it had I not wished to do so after another careful examination of the manner in which the *Saturnia Selene* (*Plectropteron Diana*) effects its exit from the silken cocoon. After such examination however I can find nothing to alter or add to my former notice of the insect, except that I have made a rough sketch of the caterpillar (Plate V. fig. 11.) and enclose it in this letter; the colours are dull compared to those of the living insect, and the green is beautifully soft and almost transparent, while at the same time the animal feels crisp and firm to the touch; the sketch is very imperfect and faulty, but will convey the figure of the caterpillar accurately enough if not already known. You state in your letter that you cannot believe the escape from the cocoon is effected by the instrument I pointed out, (namely the appendages at the sides of the front of the thorax,) *because that is present in all Lepidoptera;* this however, so far from upsetting my statement, should rather lead to the suspicion that many other species may effect their escape in the same manner as *S. Selene*, particularly as in many cases it is not

positively known how such escape is made. Look to *Saturnia* for instance, or at least to some of the genus, which are described as having "*no mouth and as taking no nourishment in the imago state;*" how does such a moth effect its escape? It cannot be by ejecting a fluid from the mouth to dissolve the threads, because the mouth is wanting; it must therefore be done by some such instrument as that already pointed out, or by a fluid from the anus. In regard to the common *Tusseh* moth of India, which is said to possess no mouth, the escape from the cocoon, which is very hard indeed, is effected by a liquid and not by cutting; this I have frequently watched; the liquid must surely be from the anus, since the mouth is wanting; the new mulberry moth which you have kindly noticed (*Bombyx Huttoni*, Westw. Cab. Or. Ent. pl. 12, f. 4,) likewise effects its escape, as does *B. mori*, by moisture, but whether from mouth or anus is, I suspect, not precisely determined.

In the 112th number of the Annals of Natural History I see Captain Boys remarks that he had never observed any *Lucani* in the plains of India, although very common in the Himalayas: *Lucanus Girafa* of Olivier has nevertheless been captured at Saugor in central India by Mr. Benson, and I took it abundantly last year at the foot of the hills in the Deyrah Dhoon; that valley however, at the place where the insect was taken, has an elevation of about 3500 feet above the sea. I likewise last year obtained a very curious and interesting beetle at Mussooree, elevation about 6500 feet; it was cut out of the trunk of an oak tree which was being broken up for fire wood; it is allied to *Scarabæus longimanus*, and belongs, I suspect, to the genus *Eucheirus*. I shall send it home shortly, and beg of you to present it to the Entomological Society of London, with my best respects. Mr. Benson obtained the thorax of another specimen from a similar situation, and a lad at this place possesses a perfect male likewise, but will not part with it. 1845 was the first year in which any of us suspected the existence of such an insect up here, and yet we have in some instances collected for the last ten years. By the bye, I observed in a former number of the Annals and Mag. Nat. History, that you had read before the Entomological Society an extract of a letter from Colonel Hearsey, in which he states that he had seen *Papilio Pammon* and *P. Polytes* in coitu; this appears to induce, or rather to confirm, an opinion which had previously been entertained, namely, that the insects were identical, being the two sexes of the same species. This opinion I am convinced is wrong, and the insects totally distinct as species, and my reasons are these; viz. 1st, I possess specimens of males and females of

both species; 2nd, the fact of their being taken in coitu is no more conclusive evidence of identity of species, than the same act between the *ass* and the *mare* would be! or the linnet and canary, or of depraved man with the brute beast! The species being nearly allied, may in certain cases where the females of either are scarce, or have been destroyed by some mischance, lead the amorous male to couple with the nearly allied species, in order merely to gratify his fierce desires, but we have no proof of the female becoming prolific from such intercourse; nor if we had, could it furnish more evidence than in the case of the horse and ass. I shall endeavour by the end of the year to make up a box of insects for the Entomological Society, and another for yourself, which I must beg you to accept. I shall likewise endeavour to procure a supply of the new mulberry silk worm; the eggs which I had procured for you were kept in too warm a situation, and hatched at a season when there were no mulberry leaves, so that they all died. In the meantime, I send you a few remarks on the genus *Papilio*, which will show what we have here in that genus.

Order LEPIDOPTERA.

Section 1. Lepidoptera diurna.

Family 1. PAPILIONIDÆ.

Genus 1. Papilio.

Sp. 1. *Papilio Machaon.* The Swallow-tail Butterfly.

It does not appear to differ from examples of the European insect which I possess. At Deyrah, in the valley of the Dhoon, it is seen on the wing as early as February, and in April, its caterpillars are abundant there on the carrot. At Mussooree, in the hills, it appears in the latter end of March and continues till October. The caterpillar is green, with a black velvety transverse band across each segment, bearing four spots of bright orange; it possesses the orange coloured retractile process in the head, from which exudes a liquid drop of a strong aromatic scent, when the insect is touched, precisely as in the European caterpillar. The food is the wild and garden carrot, and the leaves and flowers of the raddish. I have taken the caterpillars at Mussooree early in May, and the pupa on the 18th May. The same species is abundant at Simla, and extends far into the interior.

Sp. 2. *P. Podalirius.*

This species, if it really does exist in these parts, must be

extremely rare, for during a five years' residence at Mussooree, I have never been fortunate enough to see a specimen either on the wing, or in collections made here. In 1841, however, I captured a caterpillar, which I believed to belong to this insect, but to my great disappointment, it produced nothing. I therefore mention the existence of this butterfly at Mussooree, from having seen a very exact painting of the insect, done some years ago by a lady who captured a specimen near the village of Bhuttah, near Mussooree. The evidence of its occurrence may be considered insufficient, but this notice may induce collectors to make a close search for the species.

Sp. 3. *P. Epius.*

Occurs in the Deyrah Dhoon, and likewise in the hills during summer. Donovan gives the habitat "China," and Cramer, who figures it under the name of *P. Erithonius*, (Plate 232, A B,) says it is very common in China, Java, and on the coast of Coromandel, but never at the Cape of Good Hope. I have received it from Madras, and frequently took it at Neemuch, in Western India; the caterpillar feeds on the citron, and is green, with a reddish or orange coloured head; the fourth segment of the body is also bordered with the same colour, and there is a lateral oblique stripe on the hinder parts, which is blackish and edged with white; the spiracles are black; there are two short tentacular horns projecting from the anterior segment, and two others from the anal segment, beneath which latter is a whitish stripe, running obliquely forwards and downwards; a white lateral stripe above the legs, which are yellowish. It is very like the larva of *P. Pammon*, figured by Horsfield, except that the latter has no tentacular horns.

Sp. 4. *P. Demoleus.*

This likewise occurs in the Dhoon and in the hills; it very closely resembles the last, but is readily distinguished by the red spot at the inner margin of the lower wings, having a blue eye-shaped mark above it. It is figured by Donovan as a Chinese insect, and Boisduval gives the "coast of Guinea, Senegal, and Madagascar;" Fabricius again gives the East Indies, and says "the larva is solitary, smooth, of a yellowish green colour, with a reddish head, two tentacles on the neck, and a bifid tail. Boisduval again applies this to *P. Epius*, stating that *P. Demoleus* has been reared at Senegal by M. Dumolin, and that the larva feeds on the citron trees."—(Westwood's Donovan's Insects of China.) Boisduval seems to be right in referring this description of the

larva to *P. Epius*, but considering how nearly the two species are allied, it is not surprising that the larva should be very similar, and the description of the larva of the one species may therefore very nearly suit the other also. *P. Demoleus*, however, is not confined to Africa, as Boisduval's remarks would lead one to suppose, but is found in China according to Donovan, and in India according to Fabricius; the latter statement I can corroborate, for the species is far from uncommon here. It is figured by Donovan, and also by Cramer, (plate 231, A B,) who states that it is from the Cape of Good Hope.*

Sp. 5. *P. Protenor.*

Donovan figures the female, and Cramer gives both sexes (plate 49, A B) as found in China. It is by no means an uncommon species in the warm glens of these hills during the summer months, and it is common in the Dhoon. Its flight is somewhat heavy and unsteady.

Sp. 6. *P. Dissimilis.*

Occurs in warm glens as well as in the Dhoon, but it does not appear to be very numerous. It is figured by Cramer (plate 82, C D), and said to be from China, where it is supposed to be common, as almost every collection from that country is said to contain them.

Sp. 7. *P. Panope.*

Is found rather sparingly in the hills during summer, but is more abundant in the Dhoon. It is figured by Cramer (plate 295, E F) as coming from China.

Sp. 8. *P. Polytes.*

Cramer gives plate 265, C, as the female of *P. Polytes*, A B; in this he is wrong, as I have taken males and females of both. *P. Polytes*, A B, is not uncommon here during the rainy season, and at Rajpore, at the foot of the hills, it is frequently met with. Cramer's figure C is a distinct species, which is also found here, but its name is unknown to me. Cramer gives the habitat China, Java, and coast of Coromandel, to which may be added the Himalayan vallies, the Deyrah Dhoon, Neemuch, and Saugor.

Sp. 9. *P. Pammon.*

This is the most common species of the genus, being sometimes

* [Dr. Templeton states (ante, p. 44,) the distinction of the sexes of *P. Epius*, which Captain Hutton has evidently regarded as two species.—*J. O. W.*]

seen in dozens in the same field at Rajpore, and elsewhere in the Dhoon during the months of August and September; nor are they uncommon in the glens of these mountains. They are subject to great variety in the size of the white spots which compose the band on the posterior wings, as well as in the size and colour of the lunules on the under side. It is figured by Cramer (plate 141, B), and stated to occur in China, on the coast of Coromandel, and in Bengal. It is found also at Saugor, in Central India, and I have received it from Madras. Mr. Westwood mentions in his "Arcana Entomologica," that Colonel Hearsey had observed *P. Pammon* and *P. Polytes* chasing each other *con amore*, and that this fact partially confirms the statement of Boisduval as to their specific identity. Boisduval's supposition, however, is decidedly incorrect, for I have repeatedly taken the males and females of the two species; besides which, the fact of the one chasing the other could furnish no evidence, since I took at Neemuch a fine specimen of a male *Euplæa Plexippus* actually *in coitu* with *Euplæa Chrysippus*, and yet there can be no doubt whatever of the distinctness of these as species. It may so happen that in some seasons, the females, from particular causes, are scarce, and the males, burning with fierce desire, may not improbably give chase to and even couple with closely allied species, but this fact is no more conclusive evidence of identity of species, than the same act between the *ass* and the *mare* would be; or between the linnet and the canary. It merely shows that nearly allied species may, under certain circumstances, couple together for the purpose of satisfying their desires, but we have no proof of the female becoming prolific from such intercourse, nor even if we had, could it furnish more evidence than that we derive from the breeding of the horse with the ass.

Sp. 10. *P. Glycerion*, Gray.

This very delicate and beautiful species is figured in Westwood's "Arcana Entomologica;" it is rather rare with us, and I have never seen it on the wing. Mr. Westwood's figure is taken from a specimen captured at or near Simla.

Sp. 11. *P. Agestor.*

Is described by Mr. G. R. Gray as from Sumatra, but Westwood's figure is from a specimen taken in India. It is one of the earliest of the genus, being found in woody situations in April and May, dancing lightly over the tops of low bushes and trees, with a sailing kind of flight, gliding along without moving the wings. It is by no means rare at Mussooree.

Sp. 12. *P. Sarpedon.*

Is one of the commonest, but not the least beautiful of our butterflies; it appears early in May, and is found till the end of the rains in September. It usually frequents the top of oak trees, where it flits about with a jumping or jerking flight, and is somewhat difficult to capture from its quickness, and the height at which it keeps. It is figured by Cramer (plate 122, D E), and stated to be from China and Amboyna.

Sp. 13. *P. Cloanthus,* Westwood.

Is very common in fine warm weather, flitting with great rapidity over the tops of the forest trees. It usually selects some lofty oak, over the summit of which it continues to dance with a jerking flight like that of *P. Sarpedon,* until its domain is invaded by another individual, when a rapid chase round and round the tree takes place; one while they dart away from the tree down the side of the steep mountain, but ever and anon return to the favourite tree, until one is fairly driven off, when the other resumes its dance as before. It is difficult to capture, from its high and rapid flight. It appears in the end of April, and continues throughout the summer. It is most nearly allied to the foregoing, but has tails to the posterior wings. It is figured in Westwood's beautiful work the "Arcana Entomologica."

These are all the species of this genus with which I am as yet acquainted as inhabitants of these hills, but should such like communications be acceptable, I shall be very happy occasionally to record any facts that may come to my knowledge.

P.S. Since writing the above, it has occurred to me that I am wrong in saying we have no other species of *Papilio,* as there is certainly one, and probably two others. One seems to be very closely allied to, if not identical with, *P. Arcturus,* but there are some points of difference which make me hesitate to pronounce them identical; this one is very common in the Dhoon, and in warm glens in the hills, during the latter part of the summer or rainy season; the other species or variety differs in having no *tail to the blue patch* on the posterior wings,—the patch being a mere large spot, and the under surface has red lunules also. In *P. Arcturus,* a yellow crescent spot is represented by Westwood at the eye spot of the posterior wings, which neither of my species possesses.

XV. *Descriptions of several new Species of* Helæidæ *from Australia. By the* Rev. Fred. William Hope, F.R.S. &c.

[Read 6th July, 1846.]

The Marquis de Breme, in the year 1842, published the first part of his "Monograph des Cossyphides," in which he describes all the species of *Helæus* occurring in the collections of London and Paris. Thirty-eight only are mentioned, and at the period of its publication it was considered an important acquisition, as few individuals possessed even a single specimen in their Cabinets. Several of the species were described from my collection, and as I possess nearly all which are published I have little doubt that the others which are now described for this Society will be found to be new. I am inclined to consider *Helæus* as a group of much more importance than *Cossyphus*, and one which may be considered as analogous to *Cossyphus*, but totally distinct: little is known respecting its habits. In looking to the entomological fauna of Australia I do not see any reason why *Cossyphus* should not eventually appear there; most probably it exists; as in contrasting the groups of Asia and New Holland I find a preponderance of Asiatic types, with a mixture of forms altogether Australian. On this point however I need not dilate at present: it only remains for me to add, that, wishing to see described all the species of *Helæus* occurring in our metropolitan Cabinets or elsewhere, I shall feel obliged by the loan of any new species which Members of this Society may transmit to me for such a purpose.

Family HELÆIDÆ, Hope.

Sp. 1. *Helæus princeps*, Hope. (Pl. VI. fig. 1.)

Fuscus, disco in medio nigricante, marginibus pallidioribus seu rubro-fuscis, pedibusque concoloribus. Thorax antrorsum rotundatus (angulis anterioribus complicatis); foramen antice latius quam longius, postice tuberculo elevato nigricanti, foramine utrinque satis conspicuo. Elytra late ovalia, postice rotundata, medio disci atriori, suturâque elevatâ, sexque punctatis lineis elevatis in singulo apparentibus, marginibus late piceo-fulvis, punctisque atris elevatis sparsim aspersis. Corpus infra fusco-brunneum. Pedes concolores.

Long. lin. $15\frac{1}{2}$, lat. lin. $9\frac{3}{4}$.

In Mus. D. Hope.

The above magnificent insect, considerably larger than any

species of *Helœus* hitherto described, was sent to me by Captain Roe of Swan River; it was taken at Norfolk Sound.

Sp. 2. *Helœus contractus*, Hope. (Pl. VI. fig. 2.)

Ater, ovatus, postice vix dilatatus, antennis piceis; thorace marginibus elevatis, lineâque mediâ longitudinali elevatâ. Elytra sub lente tribus lineis parum distinctis notata, sparsimque punctulata. Corpus infra atro-piceum, abdomine colore piceo inquinato, pedibusque concoloribus.

Long. lin. $9\frac{1}{2}$, lat. lin. $3\frac{1}{2}$.

In Mus. D. Hope.

The above insect inhabits the vicinity of the Swan River, and, as by some individuals it may be considered at a future period as forming a subgenus, I give the following anatomical sections:—

Fig. 2 *a*, mandible; 2 *b*, maxilla; 2 *c*, mentum, labium, and labial palpi; 2 *d*, antenna; 2 *e*, extremity of tibia and base of tarsus of the fore leg.

Sp. 3. *Helœus Spinolæ*, Hope. (Pl. VI. fig. 3.)

Niger, thorace marginibusque elytrorum atro-brunneis, pedibusque piceis. Ovatus, capite depresso, subrugoso; angulis thoracis haud complicatis, elytris in medio longis, pilis crispis et atris obsitis. Corpus infra piceum, pedibus concoloribus.

Long. lin. $9\frac{1}{2}$, lat. lin. $6\frac{1}{4}$.

In Mus. D. Hope.

Habitat circa Fluvium Cygneum.

The above insect is closely allied to *Helœus perforatus* of Kirby, but differs considerably in form,* it appears to be mediate between *H. perforatus* and *Spencii*, differing from both of them. It is named in honour of the Marquis of Spinola, a veteran in Entomology, and lately the author of a splendid Monograph on the *Cleridæ*.

Fig. 3 *a*, mandible; 3 *b*, maxilla; 3 *c*, mentum, labium, and labial palpi; 3 *d*, antenna.

Sp. 4. *Helœus testudineus*, Hope. (Pl. VI. fig. 4.)

Lato-ovalis, cœnicolor, squalidus, capite depresso, angulis

* [It is of a much more regularly oval form, with each extremity somewhat acute; the anterior angles of the prothorax are subtruncate in front of the eyes and do not overlap each other, leaving an open space of nearly the breadth of the head. The disc of the prothorax has two impressed spots, and wants the central posterior tubercle which exists in *H. perforatus*.—*J. O. W.*]

anticis thoracis haud complicatis. Elytra suturâ elevatâ, medio disci crebris elevatis lineis satis notato, margine omni lato elytrorum undulato. Corpus infra concolor.

Long. lin. $8\frac{3}{4}$, lat. lin. $6\frac{3}{4}$.

In Mus. D. Hope.

The above insect was received by Mr. Gould from Port Essington.

Fig. 4 *a*, mandible; 4 *b*, maxilla; 4 *c*, mentum, labium, and labial palpi; 4 *d*, antenna; 4 *e*, extremity of tibia and base of tarsus of fore leg.

Sp. 5. *Helœus Bremei*, Hope. (Pl. VI. fig. 5.)

Orbicularis, brunneo-testaceus, antennis flavescentibus. Thorax in medio convexus et atriori colore inquinatus. Elytra testacea, sublutea, glabra, sub lente confertissime punctulata. Corpus infra concolor, pedibus rufo-piceis.

Long. lin. $6\frac{1}{4}$, lat. lin. $4\frac{3}{4}$.

Habitat circa Fluvium Cygneum.

In Mus. D. Hope.

The above insect I have named in honour of the Marquis de Breme, the author of the Monograph on the family of *Cossyphus*; at first appearance it resembles in form *Emcephalus* of Kirby; it is however allied to *Cilibe orbicularis*.

Fig. 5 *a*, maxilla; 5 *b*, mentum, labium, and labial palpi.

Sp. 6. *Helœus echinatus*, MacLeay. (Pl. VII. fig. 1.)

Ater, convexus, thorace angulis anticis complicatis, lineâque longitudinale mediâ ad scutellum interruptâ. Elytra echinata tuberculisque obsita. Corpus infra nigrum, pedibus concoloribus.

Long. lin. $6\frac{3}{4}$, lat. lin. 4.

The above species was sent to me by Mr. William Sharpe MacLeay, under the name of *echinata*, which I have retained, as it differs considerably in form from all other species,* and may form

* [This species is most nearly allied to *Helœus ovatus*, Guérin, Voy. de la Coquille, t. 5, f. 7, but differs from that species in its longer and more regular form, the thorax having a semicircular outline, and not being "un peu rétréci en avant," and the tubercles of the elytra are replaced in *H. ovatus* by broad spines.—*J. O. W.*]

at a future period the type of a new subgenus. Its anatomical details are given.

Fig. 1 *a*, mandible; 1 *b*, maxilla; 1 *c*, mentum, labium, and labial palpi; 1 *d*, antenna.

Sp. 7. *Helæus simplex*, Hope. (Pl. VII. fig. 2.)

Silphæformis, ater, capite subdepresso. Thorax convexus, marginibus elevatis. Elytra lineis elevatis haud valde conspicuis; per totum discum puncta sub lente confertissime apparent. Corpus infra nigrum, nitidum, femoribus tibiisque concoloribus tarsisque flavo-spongiosis.

Long. lin. 8, lat. lin. $4\frac{1}{2}$.

In Mus. D. Hope.

Received from Captain Roe, of the Swan River.

Fig. 2 *a*, extremity of tibia, and tarsus of fore leg.

Sp. 8. *Helæus tarsalis*, Hope. (Pl. VII. fig. 3.)

Phosphugæformis, ater, antennis subpilosis et piceis. Thorax convexus, lateribus externis margine elevato conspicuis. Elytra nigra, lineis elevatis notata, insterstitiis valde punctulatis. Corpus infra nigrum tarsis pedum flavo-spongiosis.

Long. lin. 6, lat. lin. $3\frac{3}{4}$.

In Mus. D. Hope.

The above species is also from the Swan River.

Fig. 3 *a*, extremity of tibia, and tarsus of fore leg.

9. *Helæus marginellus*, Hope. (Pl. VII. fig. 4.)

Ater, antennis concoloribus; thorace convexo, crebrissime subtuberculato, marginibusque lateralibus rubro-piceis. Elytra ternis lineis majoribus rugoso-elevatis conspicua, granulisque crebris in interstitiis satis apparentibus, margineque externo elytrorum rubro-piceo. Corpus infra nigrum, pedibus piceis.

Long. lin. 8, lat. lin. 5.

The above three species evidently form a section. The anatomical details are given in the plate. It was received from Norfolk Sound, and is, I believe, unique at present.

Fig. 4 *a*, maxilla; 4 *b*, mentum, labium, and labial palpi; 4 *c*, extremity of tibia, and base of tarsus of fore leg.

Genus Saragus, *Erichson,* Archiv. f. Naturg. 1842, p. 171.

Saragus lævicollis, Fabricius (*Silpha*).

(Pl. VII. fig. 5.)

Fig. 5 *a*, maxilla; 5 *b*, mentum, labium, and labial palpi; 5 *c*, antenna; 5 *d*, extremity of tibia, and base of tarsus of fore leg.

Genus Mitua. MacLeay.

Sp. unica. *Mitua Bidwelli,* MacLeay's MSS. (Pl. VII. fig. 6.)

Opatriformis, fuscus, antennis piceis. Caput depressum. Thorax angulis anticis porrectis subacutis, disco parum excavato et subpiloso. Elytra vix convexa, subdepressa, sutura elevata lineisque quatuor tuberculosis in singulo conspicua. Corpus infra concolor; margine externo elytrorum abdomen ambiente, internoque perforato seu valde varioloso.
Long. lin. $5\frac{1}{2}$, lat. lin. $2\frac{3}{4}$.

The above insect was sent to me under the name of *Mitua Bidwelli,* by Mr. William Sharpe MacLeay, which name I have retained; and as it is the type of a distinct genus, the anatomical details are given.

Fig. 6 *a*, labrum; 6 *b*, mandible; 6 *c*, maxilla; 6 *d*, mentum, labium, and labial palpi; 6 *e*, antenna.

XVI. *Observations on the* Sphex figulus *of Linnæus;* (Trypoxylon figulus, *Latr., Fab., &c.*); *and other* Hymenoptera. *By* F. Smith, Esq.

[Read 5th July, 1847.]

Trypoxylon figulus, previous to the year 1835, was generally considered to be a parasitic insect, about which period Mr. Johnson detected it conveying a species of *Aphis* into its nest, as recorded in Mr. Shuckard's Monograph on the British Fossores. I had myself certainly considered it to be parasitic, and its habit of frequenting old posts, dry sand banks, &c., constantly prying into every hole it meets with, strengthened my opinion. Subsequent observation shows how careful naturalists ought to be in forming conclusions, derived either from partial observation, or founded upon immaterial structural differences.

In the month of June, 1845, I met with a complete colony of *Trypoxylon*, formed in a dry sandbank; their numbers were truly astonishing, the insect being usually solitary in its habits. On the top of the bank was a close hawthorn hedge, an admirable situation in which to find its prey, generally consisting of spiders. It was quite amusing to observe the rapidity with which they captured and conveyed their prey.

Last summer, I observed several females busy about an old decayed post. One I detected burrowing with great assiduity; others were conveying their prey, which in this instance consisted of *Aphides*. I dug out several of the masses of *Aphides*, on some of which a small larva was feeding, and on another I detected an egg, which was hatched in four days. It grew rapidly, and in ten days it had consumed the whole of its stock of food, the legs and wings alone remaining. It then remained in a state of lethargy from three to four days, when it commenced spinning its cocoon; this occupied three or four days more. The cocoons are oblong, a little rounded at each end, and their length varies from four to six or seven lines; in texture they exactly resemble the semi-transparent French tracing-paper. Having spun the cocoon, the larva remains in a state of lethargy until the following spring, when at the end of April it casts off a larva skin, becomes a pupa, and then gradually assumes the perfect state; the head becoming first visible, then the wings, and afterwards the legs present themselves; it is then of a pale amber colour, which gradually becomes darker and darker, until it changes to jet black. A few warm

days now rouse the insect from its inactivity, and it by degrees struggles to free itself from the thin pellicle in which it is enveloped. The spines at the apex of the tibia are of essential service; with these it frees its antennæ of their covering, by drawing them beneath the spines, and by that means readily strips it off; they also serve to push the thin skin off the body, legs, &c. The first warm day now serves to call the insect forth into active life.

This insect, it will be observed, by no means confines itself to one kind of food. The same I have observed of *Tachytes pompiliformis*, which at one times elects a Lepidopterous larva, and at another a species of grasshopper.

I would also record an observation which I made last autumn upon *Mellinus arvensis*, which has been stated to carry dead flies to the young larva when hatched; this is undoubtedly true to some extent, as I dug out nests in which the young larva was feeding, and into which I had observed the parent insect carry a dead fly.

It is the usual mode with solitary insects to store up as much food as is necessary, and then to deposit the egg; but *Mellinus* deposits an egg on the first fly stored, and then continues to complete the necessary supply, the larva being hatched before she has completed her task. I have also to record the same habit of the common sand wasp, *Ammophila sabulosa*, which deposits an egg upon the first caterpillar which she stores up, a circumstance which I have frequently observed. One which came under my observation last summer, I detected busily engaged in pulling out the small pebbles, &c., with which she had stopped up the entrance to her burrow. I dug out the insect and found a larva feeding on a caterpillar previously deposited. I believe the difference of habit to result merely from the time of depositing the egg, and not in the insect periodically supplying the larva, as in the case of gregarious *Hymenoptera*.

XVII. *Description of* Cheirotonus Parrii, *a new Species of the Family* Euchiridæ. *By* John Edward Gray, Esq., F.R.S., &c.

[Read 7th June, 1847.]

Having recently acquired a pair of a species of the genus *Cheirotonus* from Northern India, and Captain Parry having kindly brought his specimen of the male of *Ch. Macleaii* to the Museum for comparison, I have been induced to draw up the following distinctive characters of the two species.

Cheirotonus Macleaii, *Hope.*	Cheirotonus Parrii, *Gray.*
Brassy green, with large yellow spots on the elytra.	Brassy green, the elytra marbled with yellow.
Front of the femur of forelegs angularly produced in the centre.	Front of the femur of forelegs with a small spine on the middle.
Tibia of forelegs very long, strongly curved, and sharply bent inwards at the end, with a subcentral elongated spine above, and a similar spine at the end; oblong, rather compressed, with a few scattered asperities on the upper surface, and with two minute spines on the lower outer surface.	Tibia of the forelegs moderate, very slightly arched, with two similar spines above, subtrigonal, with scattered asperities on the upper surface, and with three spines on the lower outer edge.
Thorax punctated with a triangular slight impression in the middle of the front edge.	Thorax deeply and coarsely punctured, with a small angular projection in the middle of the front edge.
Scutellum polished.	Scutellum deeply punctured.

Mr. Westwood, in describing Capt. Parry's specimen (Cabinet Oriental Ent. p. 3,) observes, that at the extremity of the tibia "there is a small thick moveable spine." I suspect that Mr. Westwood has mistaken a slight notch in the upper surface for a joint; for the terminal spine is exactly similar to the one near the middle, and as continuous with the rest of the tibia.

XVIII. *Notes on* Aphides. *By* F. Walker, Esq. In a Letter addressed to W. Spence, Esq.

[Read 6th September, 1847.]

Grove Cottage, Southgate,
August 16th, 1847.

My dear Sir,

I have received your obliging letter, and I shall be happy to send you any information I can respecting *Aphides*, but my knowledge of them is as yet very slight. I believe that the dock is one of the plants from which the black bean *Aphis* (*A. Rumicis*), is hatched from the egg in the spring, and that the second generation, which is winged, migrates thence to the bean, pea, thistle, chenopodium, &c. &c. It afterwards settles on a great variety of other plants, but does not appear to thrive on them; however, it sometimes swarms in great profusion on the laburnum, broom, and furze; it was very abundant last autumn on the furze near Lancaster, and was accompanied by the male in November, and the wingless female then deposited her eggs on the spikes of that plant. Many, especially the migratory species, have wingless and winged broods alternately, and the migrations of the latter serve several purposes; they prevent the extinction of a race which would otherwise follow the withering of its food; they cause the injury inflicted to be in general but temporary, and they distribute and thereby equalize it over a district or country. I believe that the migrations are merely in search of fresh food for themselves and young ones, and not to deposit eggs, and that, generally speaking, the migratory swarms are all females, the males not appearing till late in the autumn. I began to attend to *Aphides* last year, and I did not observe any males till October and November, when I saw them in the following species, *A. Platanoidis*, *Betulæ*, *Fagi*, *Tiliæ*, *Rubi*, *Viburni*, *Persicæ*, *Ribis*, *Mali*, *Sorbi*, *Dichoda*, and a few more. The winged males of the above named species all paired with wingless females previous to the egg-laying of the latter. Some species are always wingless, or perhaps in fine warm seasons a winged individual may now and then appear amongst the swarms; in other species all the broods are winged till the last, wherein the wingless oviparous female pairs with the winged male; but in the majority of species the wingless and winged generations are alternate, and the second brood are always winged. The best treatises on *Aphides* that I have

read, are one by Dr. Richardson (Phil. Trans.), and one by W. Curtis (Linn. Trans.) As far as I have remarked, the observations of the writer in the Phil. Trans., which you quote, are correct in regard to several species. I have never seen a male pairing with a winged female, but Mr. Hardy, an entomologist of Newcastle, informed me last year that he had observed such to be the case with one species, and I have no doubt of his accuracy. In one species (*A. Saliceti*), the wingless and winged broods of females are alternate, but in June wingless oviparous females appeared differing much in structure from their viviparous relations, and accompanied by wingless males, with which they paired. *A. juglandicola*, a pretty little yellow or orange species on the walnut, is also remarkable; the female has continued viviparizing for the last six weeks, but a short time ago the male suddenly appeared, and after a few days passed away; it was accompanied by a variety of the female, but I did not observe that they paired. I cannot say that I have seen this year any periodical flight of *Aphides*, but I do not believe that it was confined to one day nor to one species, the bean *Aphis*. Last year I distinctly remarked two large flights or migrations of several species; the first in the middle of May, the second in the middle of September; they both occurred on still fine warm days, and I think that the flight of *Aphides* is too passive and feeble to allow their migrations from a long distance. In most species, where the generations are alternate, the winged females migrate as soon as their wings are fully developed and dry, and the chief object of such flights is to place their wingless young ones in possession of fresh pastures, and their existence soon ceases when this purpose is accomplished. Do you think that a comparison of the analysis of different plants would enable us to discover why *Aphides* prefer some to others in their migrations? *A. Rosæ* migrates from the rose to the teazle, another species from the rose to the blades of corn and grasses, a third from the rose to the columbine, a fourth from the willow to umbelliferous plants, &c. Are their correspondencies in the respective proportions of the constituent parts of these plants? I remain, my dear Sir, yours sincerely,

Francis Walker.

XIX. *Notes on the Natural History of* Aphides, *translated from Ratzeburg's Forstinsecten, Vol. iii.* 1844. *By* Dr. H. Schaum.

[Read 6th September, 1847.]

Sexes.—The sexes of the *Aphides* cannot be completely described, the males being so scarce that they were never seen by Reaumur. Ratzeburg saw those of one species only; Degeer, Kaltenbach, and Bouché, have observed them oftener.

Generally the very lively *males* are *winged*, but there are also *apterous* males. In almost all cases they are much *smaller* than the females; the apterous ones so much so, that the only time when Kaltenbach saw them, he took at first the males, which were in copulation, for young specimens on the back of their mothers. They measured scarcely one-eighth of the size of the females. Also the winged males are generally much smaller. A constant character of this sex is, according to Kaltenbach, the deeply emarginated semilunar shape of the first anal lobe.

Metamorphosis.—It is incomplete, but differs in several points from that of the other *Ametabola*. It does *not always* begin with the *eggs*, but often with the *larva* state. Besides we find in the *same species*, *Pteromatabola* and *Apterometabola*; this is proved to be the case in the *females*, although not quite so well ascertained in the males. The larvæ are less perfectly articulated, the joints of the antennæ fewer, the ocelli wanting, &c. It is surprising that the *apterous female parents*, consequently *imagines*, have fewer joints of the antennæ than the winged females and larvæ. It is generally stated, that they cast their skin four times.

Habits.—These soft and tender insects require a mild temperature, a closed place, and a luxurious vegetation. Consequently they are more common in the southern countries and in gardens. They prefer the underside of the leaves, and are more frequent on wood than on grasses and herbs. No indigenous tree is free from them; on the birch and willow from eight to ten species are found. The same species is generally confined to one particular place on the tree. They are, as both Linné and Schrank knew well, generally strictly *monophagous*. The puncture of their beak very often causes no injury whatever; in other cases, however, diseases and disfigurations are produced by it, which are always the *same*

in the same species. The most striking monstrosities are often produced only by the minute female parent.

Development.—It is well known that the *Aphides* are propagated through many generations in a year; that all those generations are born *alive* at one period by apterous and at another by winged females; that the presence of a male is not required, and that the males appear only when, at the end of that enormous multiplication, *eggs* are deposited by *unwinged* females. Not all of them, however, have *many* generations, nor are all both oviparous and viviparous; most likely some genera are only viviparous, some others only oviparous. Kaltenbach has based on this difference a division into *vivi-oviparous*, *viviparous*, and *oviparous*. Of the two latter we know at present very little. The vivi-oviparous bear during the summer only living young, and infinitely often; in the autumn at the same time with the appearance of the males, eggs are deposited, from which the female parents of the next year are produced. This sometimes happens during the winter, oftener in the next spring. The action of bearing in the summer, as well as the deposition of the eggs in the autumn, can easily and often be observed. They bear often fourteen or fifteen times a day; after the lapse of from four to ten days, the young specimens begin to bear. In June we find often grandmothers and grandchildren together; the latter are then already often winged. In the same brood there often occur winged and apterous specimens; the apterous are always sooner fertile. The deposition of the eggs, which always causes the death of the specimen, takes place in autumn, and always from *apterous* females.

Copulation.—The act of it is seldom observed, the males being so scarce and so small, and observation being seldom made at the exact time it takes place. Bouché saw that the same male copulated with from four to six females, one after another.

Hibernation.—The *Aphides* hibernate generally in the state of eggs; sometimes the female parents survive the winter; those of the viviparous species always. Bouché saw whole colonies hibernate, even males, which had not copulated.

Importance in economy to fields, gardens, and forests.—The *Aphides* are in this respect very important; they often cause monstrosities and distortions of leaves, and are often very pernicious to the crops. The mildew of the grain crops and upon peas is said by several authors to be the product of *Aphides;* this is, however, not likely. The number of *Aphides* is sometimes

enormous. Kirby and Spence state that they are in England amongst the greatest enemies of vegetation. Their augmentation is favoured by warm weather, sultry air, &c. Means of destruction are hardly applicable. The advice given is to strew powdery substances on low herbs, and this proves generally to be efficacious; gypsum, powder of lime, salt, &c. The larvæ of *Coccinellidæ*, *Hemerobii*, and some *Syrphi*, are their enemies, and these are to be spared.

A few additional Observations from an Article by Kaltenbach, in the Entomol. Zeitung of Stettin, 1844.

1. Several genera have no apterous females besides the female parent, but only winged females and nymphæ.

2. In some years no winged females appear of some species, which, however, are observed in a more favourable year. For instance, Kaltenbach could not see any winged females of *Lachnus quercûs* in 1844; it was only in 1845 that he found one.

XX. *Two Decades of new* Cetoniidæ. *By* Dr. H. Schaum, Secretary of the Entomological Society of Stettin.

[Read 1st November, 1847.]

Sp. 1. *Heterorrhina* (*Plæsiorrhina*) *Swanzyana*, Parry, MS.

Supra nigra; subiridescens, thoracis margine laterali pygidioque rufo-testaceis, vitta elytrorum laterali flava, subtus rufo-testacea, tibiis tarsisque nigris.

Long. 8½ lin.

Habitat in Guinea. Mus. Parrii.

Caput fere ut in *Pl. mediana*, Westw., formatum, clypeo quadrato, parum marginato, antice recto, angulis rotundatis, fronte obsolete carinata, nigrum, creberrime punctulatum. Thorax a basi antrorsum angustatus, disco fere lævis, lateribus punctulatus, niger, subiridescens, margine laterali ultra medium rufo-testaceo. Scutellum nigrum, nitidum, linea longitudinali obsoleta. Coleoptera oblonga, latitudine duplo longiora, postice parum angustata, sparsim subtilissime punctata, sutura postice subelevata, nigra, subiridescentia, vitta laterali neque humeros neque angulos posteriores at-

tingente flava. Pygidium rufo-testaceum. Corpus subtus totum cum femoribus rufo-testaceum, tibiis tarsisque nigris, tibiis posticis nigro-ciliatis. Processus sternalis angustus, apice recurvus ♂.

Of this species I have only seen one male in the collection of Captain Parry, to whom it was sent by his friend Swanzy, Governor of Fort Dixcove, on the Goldcoast of Guinea. The shape of the head and the colour of the body being the same as in *Plæsiorrhina mediana*, I believe that the female has simple anterior tarsi, and that the species consequently belongs to the division *Plæsiorrhina*. By its elongated shape it resembles *Pl. recurva*, Fab.

Sp. 2. *Heterorrhina bicostata*, Melly, MS.

Smaragdina, punctata, capite quadrato, inermi, thorace parvo, elytris elongatis, bicostatis, sterni mucrone brevi, recto.

Long. 10 lin.

Habitat in Guinea. Mus. Mellii.

Caput inerme, elypeo quadrato, antice truncato viride, nitidum, punctatum. Antennæ nigræ, clava majore. Thorax parvus, a basi antrorsum angustatus, lateribus obliquis, viridis, nitidus, undique punctulatus. Scutellum magnum, latitudine longius, punctis paucis minimis impressum. Elytra valde elongata, thorace plus duplo longiora, postice vix angustata, smaragdina, sutura apice subacuminata costisque duabus elevatis fere lævibus, interstitiis et lateribus profundius et crebrius punctatis. Subtus smaragdina, processus sternalis parte mesosternali brevi subdependente, fere recto. Tibiæ anticæ in specimine viso inermes, posteriores interne longitudinaliter sulcatæ, posticæ elongatæ, extus obtuse dentatæ, tarsi postici tibiis multo breviores ♂.

Having seen one male specimen only, I cannot decide if this species belong to the sectio *Coryphocera*, Burm., or *Plæsiorrhina*, Burm. The square head is, however, more like that of *Coryphocera viridiænea*, than that of *Plæsiorrhina recurva*. In its general appearance it much resembles the genus *Tmesorrhina*, from which it may however be at once distinguished by its narrow sternum. The small thorax, the short posterior tarsi, the sulcated middle and hind tibiæ, and the shortness of the mesosternal part of the sternal process, are characters peculiar to this species.

Sp. 3. *Gymnetis pœcila.* (Pl. VIII. fig. 2.)

Atra, supra holosericea, subtus nitida, elytrorum guttis quibusdam et limbo posteriore, intus bilobato, nigro-punctato flavis.

Long. 10—12 lin.

Habitat in Mexico. Mus. Berolin., Thoreyi, nostr.

G. Sallei quodammodo similis, sed capite thoraceque atris elytrorum signaturis, sterno minore, etc. abunde differt. Caput holosericeum, clypeo quadrato, apice marginato. Thorax et scapulæ atra, holosericea, immaculata. Coleoptera thorace latiora, postice parum angustata, supra plana, sutura subelevata; atra, holosericea, parte anteriore guttis maculisque quibusdam lateralibus et basalibus flavis, parte posteriore late flavo-limbata, limbo intus bilobato, lobo anteriore in fasciam mediam irregularem extenso, limbo ipso nigro-punctato. Pygidium atrum. Corpus subtus atrum, medio nitidum, femoribus anticis tibiisque posterioribus nigro-pilosis. Processus sternalis, ut in similibus, dependens ♂.

This species belongs to the same division as *G. marmorea*, *Sallei*, &c.

Sp. 4. *Gymnetis Wollastonii.* (Plate VIII. fig. 3.)

Supra chromatica, irregulariter nigro-maculata, subtus glauca.

Long. 14 lin.

Habitat in Mexico. Mus. nostr.

Caput chromaticum, verticis puncto nigro, clypeo quadrato, marginato. Thorax luteus, maculis numerosis nigris, decem exterioribus in circulo dispositis et interiores radiatas includentibus. Scapulæ luteæ. Coleoptera thorace latiora, subquadrata, postice subangustata, sutura apice subacuminata; lutea, irregulariter crebre nigro-maculata. Pygidium glaucum, transversim subtiliter strigosum, glabrum. Corpus subtus cum pedibus glaucum, femoribus anticis tibiis posterioribus fulvo-fimbriatis. Processus sternalis magnus, dependens, supra angulatus. Tibiæ anticæ tridentatæ.

This beautiful species (which I have dedicated to my friend V. Wollaston) belongs to the tenth division established in the genus *Gymnetis*, by Professor Burmeister.

Sp. 5. *Gymnetis Dysoni*, White, MS.

Supra rubra, nigro-maculata, subtus atra nitida, tibiis posterioribus nigro-villosis.

Long. 10 lin.

Habitat Venezuelæ. D. Dyzon. Mus. Britan. et nostr.

Caput cinnabarinum, vertice puncto nigro, clypei margine late nigro, apice subsinuato. Antennæ nigræ. Thorax cinnabarinus, maculis numerosis nigris, magnitudine et numero variantibus, seriebus quinque longitudinalibus dispositis, præter has macula singula utrinque prope angulum posteriorem. Coleoptera plana, cinnabarina, crebre nigro-maculata, maculis juxta suturam in serie dispositis. Pygidium atrum, strigosum. Corpus subtus nigrum, nitidum, pectore fortiter punctato, coxis posticis abdominisque segmentis lateribus punctis minutis rubris. Processus sternalis valde dependens, supra carinatus.

By its shape and markings this is allied to *G. meleagris*, Burm., but the colour is the same as in *G. hieroglyphica*. The hairs of the tibiæ are black, &c.

Mr. White has alluded to this species in Taylor's Annals of Natural History, vol. xx. p. 266.

Sp. 6. *Gymnetis fœda*.

Cinereo-fusca, punctis nigris impressa, scutelli apice fulvo hirsuto, elytris maculis tribus nigris, subtus nigro-villosa.

Long. 9—10 lin.

Habitat Venezuelæ. D. Dyson. Mus. Britan., Parrii, et nostr.

Caput cinereo-fuscum, punctis nigris impressis, clypeo quadrato, apice alte marginato, margine reflexo, parum sinuato. Antennæ nigræ. Thorax cinereo-fuscus, medio magis obscurus, signatura obsoleta nigra fere literam M efformante; disco sparsim punctatus, punctis lateribus multo crebrioribus et aciculatis, setas nigras gerentibus. Scutellum minimum, dense fulvo-hirsutum. Scapulæ griseæ, punctis nigris impressis. Elytra postice parum angustata, obsolete costata, costa a medio basi ad callum apicalem decurrente, sutura apice, in mare magis, acuminata, cinereo-fusca, punctis nigris juxta suturam et in dimidio exteriore congestis, maculis tribus nigris, prima in callo humerali, secunda fere media, tertia in callo apicali, fere literam U efformante, lobo literæ

interiore longiore et costæ supra descriptæ partem posteriorem occupante. Pygidium dense nigro-strigosum et nigro-setosum. Corpus subtus obscure griseum, dense nigro-strigosum et nigro-setosum, pectore abdomineque mediis lævioribus, glabris. Processus sternalis ut in *G. liturata* formatus. Pedes grisei, tarsis nigris, nitidis, femoribus tibiisque nigro-villosis, tibiis anticis in utroque sexu tridentatis, dentibus superioribus in mare magis obtusis.

This species is allied in colour and markings to *G. liturata*, but it is three times larger.

Sp. 7. *Stethodesma hæmatopus*, Parry, MS.

Atra, nitida, punctata, femoribus tibiisque sanguineis, sterno lato, parallelo, apice subacuminato.

Long. 14 lin.

Habitat in Colombia. Mus. Parrii.

Species eximia, femoribus tibiisque sanguineis a *S. lobata* distincta. Caput atrum, nitidum, punctatum, bifidum, laciniis acutis. Thorax ater, nitidus, undique sparsim punctatus, lobo posteriori fere lævi. Scutellum minimum, acutum. Coleoptera basi thoraceque latiora, elongata, postice subangustata, atra, nitida, plana, undique punctis majoribus seriatim digestis obtecta. Pygidium transversim strigosum. Corpus subtus atrum, rugoso-punctatum, medio læve, sterno lato, plano, lateribus parallelis, parte metasternali coxas medias multo superante, apice subacuminato. Femora tibiæque sanguinea, tarsi nigri. Tibiæ anticæ in individuo feminino tridentatæ.

Sp. 8. *Macronota quadrivittata*, Parry, MS.

Nigra, supra opaca, thoracis postice impressi vittis quatuor flavis, elytris rubris margine nigro, flavo-maculato, pedibus rubris.

Long. 7 lin.

Habitat in insula Ceylon. Mus. Parrii et Westw.

M. quadrilineatæ simillima, thorace postice excavato, scutello majore, elytris postice angustioribus, aliter signatis distincta. Caput fortiter punctatum, nigrum, subnitidum, vittis duabus flavis, clypei apice subsinuato. Thorax lateribus a basi usque ante medium rectis, antice subito angustatis, lobo posteriore brevi, supra postice excavatus, niger, velutinus, vittis

quatuor flavis rectis. Scutellum magnum impressum, basi apiceque flavo-maculatum. Elytra postice valde angustata, abdomen non omnino obtegentia; juxta suturam excavata, pone humeros impressa, rubra velutina, margine interno et externo nigris, interno juxta suturam longitudinaliter striolato, externo punctato, maculis duabus lateralibus et lituris suturalibus flavis, litura posteriori versus angulum exteriorem hamata. Pygidium nigrum, macula magna media flava. Corpus subtus ut in *M. quadrilineata* maculis et fasciis flavis. Pedes rufi, femoribus basi nigris. ♀.

Sp. 9. *Glycyphana* (*Gametis*) *Kuperi*, White, MS. (Tab. VIII. fig. 6.)

Viridis, thoracis margine punctisque duobus disci albidis, elytris plaga magna mediana flava maculisque septem albidis.

Long. 5 lin.

Habitat in China. Mus. Britan. et nostr.

G. Bealiæ similis. Caput nigrum, dense punctulatum, vertice summo viridi, flavo-villoso, clypeo antice bifido, lobis subreflexis. Antennæ nigræ, clava extus brunnescente. Thorax disco punctulatus, lateribus longitudinaliter strigosus, viridis, opacus, limbo laterali tenui punctisque duobus disci albidis. Scutellum viride, opacum, læve. Scapulæ virides, puncto albido. Elytra postice subangustata, supra depressa seriato-punctata, seriebus a basi incipientibus, interstitiis alternis subconvexis, viridia, plaga magna mediana flavo-brunnea et maculis septem albidis, prima anteriore punctiformi, tribus lateralibus majoribus, duabus juxta suturam parvis, septima apicali majori. Interdum puncta nonnulla alia inter maculas laterales et juxta apicalem observantur. Pygidium viridi-nigrum, maculis quatuor albidis. Corpus subtus cum pedibus viridi-nigrum, flavo-villosum, abdomine medio glabro, sterno brevi, apice lato, rotundato.

Sp. 10. *Glycyphana* (*Gametis*) *plagiata*, Horsfield, MS.

Atra, velutina, thoracis margine laterali punctisque duobus disci albis, elytris plaga mediana flavo-brunnea, punctisque quatuor albis, pygidio bimaculato.

Long. 5 lin.

Habitat in Java. Mus. Horsfieldii, Brit. et nostr.

G. Bealiæ iterum similis. Caput atrum subnitidum, creberrime

punctatum, fere rugosum, clypeo elongato, apice medio exciso, lobis subreflexis. Antennæ nigræ. Thorax ater, velutinus, margine laterali tenui punctisque duobus disci albis, supra scutellum sinuatus, angulis anticis acutis. Scutellum atrum lævе. Elytra postice parum angustata, apice rotundata, supra depressa, sutura postice subelevata supra fere plana, atra plaga magna mediana marginem exteriorem sed non suturam attingente flavo-brunnea, punctis quatuor posticis albis, duobus juxta suturam duobus juxta marginem positis. Pygidium maculis duabus magnis irregularibus albis. Subtus atra, nitida, femoribus fulvo-villosis, abdomine utrinque punctis duobus albis. Sternum breve, planum, apice late rotundatum.

Sp. 11. *Glycyphana* (*Gametis*) *Behrii.*

Subconvexa, atra, supra brunnea, thoracis vittis duabus infuscatis, lateribus punctisque duobus disci albidis, elytrorum vitta suturali margineque externo infuscato maculisque quinque albis.

Variat tota atra, thoracis lateribus punctisque duobus, elytrorum maculis quinque albis.

Long. 5 lin.

Habitat in Archipelago Indico. Mus. nostr.

Caput atrum, subnitidum, creberrime punctatum, fere rugosum, clypeo elongato, antice exciso, laciniis subreflexis. Antennæ atræ. Thorax seu brunneus, vittis duabus latis infuscatis, seu niger, velutinus, margine laterali tenui punctisque duobus disci albidis. Scutellum seu brunneum, lateribus infuscatum, seu nigrum, puncto apicali albido. Scapulæ nigræ, puncto albido. Elytra postice parum angustata, apice rotundata, supra subconvexa, brunnea, margine externo vittaque suturali infuscatis, in aliis omnino nigra, maculis quinque albidis, tribus marginalibus duabus postice juxta suturam positis. Pygidium atrum, maculis quatuor albidis. Subtus atra, nitida, flavo-villosa medio glabra, pectore utrinque maculis duabus parvis albis. Sternum breve, apice rotundatum.

Six specimens, of which two belong to the black variety, have been taken by my friend Dr. Behr, in a little isle in the Road of Bali, eastwards from Java.

Sp. 12. *Oxythyrea septicollis.*

Atra, supra velutina, thoracis circulo marginali, pygidio, abdomine tibiisque posticis luteis, elytris luteo-viridibus.

Long. 4 lin.

Habitat in Guinea, (Ashantee). Mus. Turneri et Mellii.

Caput nigrum, subnitidum, punctulatum, medio obsolete carinatum. Antennæ nigræ. Thorax margine postico supra scutellum rotundato, basi multo latior quam apice, lateribus rotundatis, ater, velutinus, margine laterali et postico luteo. Scutellum parvum, luteo-viride. Coleoptera luteo-viridia, ad latera et postice magis lutea, immaculata, ad basin subtiliter seriato-punctulata, postice subtiliter striolata. Abdomen totum cum pygidio luteo-rufum. Pedes nigri, tibiis posticis rufis.

Sp. 13. *Oxythyrea Helenæ.* (Tab. VIII. fig. 7.)

Atra, nitida, antennis, thorace, pygidioque rufis, elytrorum vitta laterali alba.

Long. $3\frac{1}{2}$ lin.

Habitat in Abyssinia. Mus. Britan. et nostr.

O. thoracicæ simillima. Caput atrum, crebre punctatum, clypeo elongato, antice parum emarginato. Antennæ rufæ. Thorax longitudine latior, supra scutellum vix sinuatus, punctulatus, rufus, nitidus. Scutellum atrum, punctis paucis impressum. Coleoptera basi thorace latiora, apicem versus valde angustata, sutura postice elevata, apice producta, seriebus sex punctorum semicircularium, seriebus per paria approximatis, impressis tribus internis postice in strias geminatas excurrentibus, atra, nitida, vitta laterali neque humeros neque angulum suturalem attingente candida. Corpus subtus atrum, abdominis segmentis duobus ultimis pygidioque rufis.

Sp. 14. *Tephræa morosa,* Melly, MS.

Atra, crebre punctata, subtus nitida.

Long. 6 lin.

Habitat in Africa Australi Orientali. Mus. Mellii et Berol.

T. pulverulentæ simillima, supra tota atra, crebrius fortius punctata. Clypeus creberrime punctatus, subnitidus, omnino ut in *pulverulenta* formatus. Thorax lateribus et angulis rotundatis, supra scutellum distincte sinuatus satis convexus,

undique crebre punctatus. Scutellum punctis nonnullis impressis. Scapulæ fortiter punctatæ. Elytra subnitida, arcubus semicircularibus seriatim dispositis impressis, postice juxta suturam confluentibus, interstitiis punctis quibusdam sparsis, apice et versus latera rugosa. Subtus atra, nitida, pectoris lateribus strigosis, abdomine sparsim punctato.

Mr. Melly had formerly named this species *T. atra;* but seeing that this name was already several times employed amongst the *Cetoniæ,* he has altered it to that of *T. morosa.*

Sp. 15. *Cetonia* (*Protætia*) *Whitehousii*, Parry, MS. (Tab. VIII. fig. 3.)

Supra purpurea velutina, thoracis lateribus antice, scapulis, elytrorumque maculis tribus marginalibus fulvis, subtus atra, nitida, fulvo-maculata, pygidio purpureo fulvo-bimaculato, sterno antice parum rotundato.

Long. 10 lin.

Habitat in Insula Ceylon. Mus. Parrii.

Species pulchra, *C. regali* et *ferrugineæ* statura similis. Caput cupreum, punctatum, clypeo antice parum emarginato, vertice velutino. Thorax supra purpureus, velutinus, lævis, laterum dimidio anteriore fulvo, subtus maculis magnis, lateralibus piliferis fulvis. Scapulæ macula magna fulva. Scutellum elongatum, purpureum, læve. Elytra postice parum angustata, suturæ apice brevi; plana, purpurea, velutina, maculis tribus marginalibus fulvis, prima ante, secunda paulo majore pone medium, tertia apice juxta suturam posita. Pygidium purpureum, maculis duabus fulvis. Subtus atra, nitida, pectoris maculis magnis flavis. Abdominis segmenta punctis lateralibus, tertium et quartum utrinque maculis magnis fulvis. Pedes nigri, femoribus tibiisque fulvo-pilosis. Sternum paulo magis quam in *C. ferrugineo* porrectum, apice parum rotundatum.

Sp. 16. *Cetonia* (*Pachnoda*) *crassa.*

Atra, supra velutina, capitis macula triangulari, thoracisque margine antico et laterali flavis, pygidii puncto apicali rufo, sterni apice testaceo.

Long. 9 lin.

Habitat in Abyssinia. Mus. nostr.

Caput atrum, punctatissimum, macula triangulari ut in *P. ornata* flava. Thorax ater, velutinus, margine antico tenui, laterali lato flavis, hoc punctum nigrum includente; præterea in specimine meo linea tenuissima longitudinalis flava, quæ basin non attingit, observatur, quæ verisimiliter in aliis omnino deest. Scutellum atrum, læve. Coleoptera postice subangustata atra, velutina, punctis quibusdam apicalibus inconstantibus rufis. Pygidium atrum, nitidum, puncto apicali rufo. Subtus atra, nitida, abdomine utrinque punctis quinque marginalibus albis, segmento ultimo apice transversim testaceo-maculatum. Sternum breve, latum apice testaceum. Coxæ posticæ testaceo-maculatæ. Femora anteriora subtus testacea, dense flavo-villosa, genua omnia alba.

Of this species I have seen one specimen only. I think the extent of the markings may vary in others. It is in its shape allied to *Cetonia olivacea*, but it is much stouter. *C. limbata*, Fabr., of which I have seen the original specimen in Mr. Westermann's collection in Copenhagen, is, if I well recollect, more elongated, has no yellow triangular spot on the head, and no black spot on the yellow margin of the thorax, &c.

Sp. 17. *Schizorrhina* (*Diaphonia*) *palmata*. (Tab. VIII. fig. 4.)

Nigra, fortiter punctata, elytrorum parte majore pygidioque testaceis, tibiis posticis incurvis, tarsis maris omnibus compressis, anticis palmatis.

Long. 14 lin.

Habitat Adelaidæ, in Nova Hollandia. Mus. Thoreyi.

Caput nigrum, crebre punctatum, griseo-pilosum, clypeo elongato, lateribus parallelis, angulis anticis rotundatis apice paulo emarginato. Antennarum clava in mare clypei longitudine, brunnea. Thorax niger, breviter pilosus, crebre punctatus, linea media lævi. Scutellum atrum subviolaceo-micans, lateribus punctis aliquot impressis. Elytra capite thoraceque dimidio longiora parce fortiter punctata, obsolete bicostata, lateribus transversim rugosa, parte basali atra subviolaceo-micanti, parte posteriore testacea irregulariter atro-maculata. Pygidium testaceum, nitidum. Corpus subtus atrum, griseo-villosum. Sternum porrectum latum, apice subangulatum. Tibiæ compressæ, anticæ maris oblique truncatæ, posticæ

incurvæ. Tarsi lati antici palmati, posteriores compressi, unguibus minutis ♂.

The structure of the tarsi of the male might justify the establishment of a peculiar subgenus for this extraordinary insect. As it agrees however in its principal characters with *Diaphonia*, I have not thought it convenient to separate it. The hinder tibiæ of the male are curved, and the clava of the antennæ as large as the clypeus, like in the *D. eucnemis*, Burm., while the shape of the sternum and of the pygidium is more like in *D. dorsalis*, Donov.

Sp. 18. *Schizorrhina* (*Diaphonia*) *rugosa*. (Tab. XI. fig. 6.)

Crassa, supra nigra, fortiter punctata, clypeo toto, thoracisque lateribus late testaceis, elytris brevibus, bicostatis, lateribus densissime rugulosis, subtus testacea, pilosa, tarsis nigris.
Long. 7 lin.
Habitat in Nova Hollandia. Mus. Britan., Parrii et nostr.

Corpore brevi crasso contracto, abdomine juxta elytra libero, a reliquis hujus generis speciebus valde distincta. Caput nigrum, nitidum, fortiter punctatum, clypeo brevi rotundato, marginato antice subsinuato, hoc et macula annexa frontali triangulari testaceis. Antennæ nigræ, clava clypeo longitudine. Thorax brevis, a basi ad apicem angustatus, lateribus parum rotundatis, fortiter crebre punctatus, linea media longitudinali lævigata, niger, subnitidus, lateribus late testaceis. Scutellum basi punctis paucis impressis. Elytra thorace vix dimidio longiora, postice angustata et rotundata, abdomen non omnino obtegentia, supra disco costis duabus elevatis, exteriore magis obsoleta juxta suturam fortiter crebre punctata, extrorsum a costa interiore densissime rugulosa, fere scabra; costa tertia obsoleta juxta marginem exteriorem observatur. Pygidium valde inflexum, testaceum. Corpus subtus testaceum, pilosum, abdominis segmentorum marginibus nigris. Pedes breves testacei, villosi, femoribus anticis supra, tibiis extus tarsisque totis nigris, his glabris. Tibiæ anticæ fortiter bidentatæ ♂.

This species forms a peculiar division of the subgenus *Diaphonia*. The five specimens, which I have seen of it, were all males.

Sp. 19. *Ischnostoma nasula*, Boheman, MS. (Tab. VIII. fig. 5.)

Atra, pilosa, elytris obscure testaceis.
Long. 6 lin.
Habitat ad portum Natal, Dr. Wahlberg. Mus. nostr.

Caput nigrum, profunde et remote rugoso-punctatum, pone antennarum insertionem utrinque attenuatum; clypeo producto; lateribus marginato, medio longitudinaliter obtuse elevato, parte basali subquadrata basi sensim angustata, apice profunde emarginata angulis anticis acutis sublunatis, parte apicali e media parte basali producta, fere ancoriformi, seu apice utrinque dilatata, acuta, antice distincte emarginata. Antennarum clava maxima clypei longitudine. Thorax semicircularis, ater, fulvo-pilosus, undique crebre punctulatus. Scutellum punctulatum, fulvo-pilosum. Elytra obscure testacea, sutura margineque exteriore nigris, parce breviter nigro-setosa, costis duabus obsoletis, undique punctulata. Pygidium atrum inflexum, glabrum. Corpus subtus cum pedibus atrum. Tibiæ anticæ tridentatæ, dentibus duobus inferioribus magnis distantibus, superiore obsoleta ♂.

I know only the male of this interesting species, which has been given to me by Professor Boheman.

Sp. 20. *Platygenia exarata*, Melly, MS.

Picea, clypei apice emarginato, angulis reflexis acutis, elytris obsolete tricostatis, interstitiis latis, opacis, rugulosis, tarsis elongatis.
Habitat in Africa Occidentali. Mus. Mellii.

Caput nigro-piceum, undique crebre punctulatum, longitudine non latius, apice emarginatum, elypei angulis anticis reflexis acutis. Thorax longitudine dimidio latior, lateribus medio dilatatus, angulis posticis rectis, acutis, niger, piceus, undique creberrime punctulatus. Scutellum basi punctis nonnullis impressis. Coleoptera thoracis medio latiora, thorace duplo longiora humeris et apice rotundata, supra subdepressa, sutura costisque in singulo tribus obsoletis, nitidis, interstitiis latis, rugulosis, opacis. Pygidium ante medium obsolete elevatum, ante apicem transversim impressum, apice subacuminato, subtus triangulariter impressum. Subtus piceum,

abdomine undique creberrime punctatum, pectore medio fovea longitudinali creberrime punctata. Abdominis segmentum ultimum apice truncatum. Pedes elongati, tibiæ posteriores parce setosæ; tarsi tibiis non breviores, articulis elongatis, unguiculis acutis simplicibus ♀.

This very remarkable insect is unique in Mr. Melly's collection. The specimen was found under the fifth degree of northern latitude in Western Africa. The species recedes from the type of the genus in some important characters. The head is scarcely broader than long; the clypeus is bidentated; the thorax much narrower; the legs much more elongated, chiefly the tarsi, the joints of which are more slender, the claws longer and sharper. The shape of the pygidium, and the posterior tibiæ having only a few hairs, prove that the specimen is a male, though it has on the middle of the pectus an impression, which is, however, not so deep as in the male of *P. barbata*.

EXPLANATION OF PLATE.

Plate VIII. fig. 2. *Gymnetis pœcila*, Schaum.
3. *Gymnetis Wollastonii*, Schaum.
4. *Schizorrhina palmata*, Schaum.
5. Head of *Ischnostoma nasuta*, Schaum.
6. *Glycyphana Kuperi*, White.
7. *Oxythyrea Helenæ*, Schaum.

XXI. *Monograph of the British Species of the Genus* Chrysopa. *By* W. F. Evans, Esq.

[Read 6th September, 1847.]

The following table has been drawn up after a careful examination of those possessed by J. F. Stephens, Esq., the greater portion of which he kindly lent me to draw the accompanying figures from, which I have thought would aid in the discrimination of the several species.

But little attention has been paid to the early states of these insects. The larvæ of *C. perla* and *C. reticulata*, it would appear, cover themselves with the skins of their prey, the *Aphides*, on which they all feed most voraciously. (See Stephens' Mand. vol. vi.; Westwood's Mod. Class. Ins. vol. ii., and Kirby and Spence's Introd.; and Reaumur, vol. iii.) Five different cocoons and larvæ can readily be distinguished on reference to the plates.

EXPLANATION OF THE PLATES.

Pl. IX. fig. 1. *Chrysopa alba.*
2. ,, *affinis.*
3. ,, *angustipennis.*
4. ,, *perla.*
5. *Chrysopa subfalcata.*
6. ,, *carnea.*
7. ,, *abbreviata.*

Larva of *C. perla*, from Albin, pl. 64 (under fig. 2).
ditto from a living specimen.
Cocoon of *C. alba?* from Reaumur, vol. iii. pl. 33, fig. 2 (under fig. 2).
Cocoon of *Drepanepteryx Phalænoides*, see Reaumur, vol. iii. pl. 32, fig. 8, and his description.

Pl. X. fig. 1. *Chrysopa fulviceps.*
2. ,, *capitata.*
3. ,, *reticulata.*
4. *Chrysopa maculata.*
5. ,, *immaculata.*
6. ,, *ventralis.*

Portion of maxillary palpi, from Wesmael, Hémérobides de Belgique.
Tarsi—claws—antennæ—a portion of a wing.
Eggs, from Reaumur.
Larva of *C. alba*, from a living specimen (in the centre), see Reaumur's figures, &c. with which this agrees.
Cocoon of *C. perla*, from Albin, pl. 64 (in the centre), see Lister on Gödart, fig. No. 104, and Ratzeburg Die Först Insecten, tab. 16, with which this agrees.
Larva of *Drepanepteryx*, from Reaumur, (upper figure under No. 6).
Larva of an unknown species, from Reaumur, (under the above).
Two cocoons, from Reaumur.
Larva (? of *C. reticulata* or *alba*), from Reaumur, covered.

	Synonymes.	Bibliographical References to Figures.	Expanse of Wings in Lines.	Wings.
C. perla, Pl. IX. fig. 4.	*pectinicornis*, Besk.	Don. 8, pl. 277, fig. 2; Barbut, Gen. 220, pl. 22; Shaw, G. 3, b. 258, pl. 83; Reaum. 3, pl. 32; Westw. Mod. Class. 2, 46; Albin. pl. 64; Lister on God. p. 93, No. 104; Ent. Mag. 4, 176; Ratz. die Först Ins. pl. 14, 8; Petag. Ins. Cal. 336, 1, p. x. 17; Roesel, 3, 128, 30, fol. 21, 5; Göd. 2, 40, pl. 7, fig. 14; Westw. Ent. Text Book, pl. 3.	14 to 23 .	Green .....
C. affinis, Pl. IX. fig. 2.	.....	.....	12 to 14 .	Pale green ..
C. subfalcata, Pl. IX. fig. 5.	.....	.....	14 to 16 .	Pale green ..
C. alba, Pl. IX. fig. 1.	*vittata*, Wesm..... *albus*, Oliv. ,, Panz. *flavus*, Scop. ,, Roes. ,, Scharf.	Panz. F. 87, f. 14; Ratz. pl. 14, f. 6? Reaum. 3, tab. 33, f. 2.	10 to 12 .	Delicate white, with yellowish green iridescence.
C. angustipennis, Pl. IX. fig. 3. (? var. of *alba*.)	.....	.....	12 to 15 .	Delicate white, with yellowish green.
C. abbreviata, Pl. IX. fig. 7.	.....	Curt. Brit. Ent. pl. 520	9 to 10 ..	Green .....
C. immaculata, Pl. X. fig. 5. (? var. of *abbreviata*.)	.....	.....	9 to 12 ..	Pale green, iridescent.
C. reticulata, Pl. X. fig. 3.	*chrysops*, Oliv..... ,, Petag. ,, Latr. ,, Illig. ,, Schra. ,, Fab. *viridis*, Retz.	Wood, 2, 29, pl. 49; Panz. F. 87, f. 13; De Geer, 2, 708, pl. 22, 1, 2; Schaeff. Icon. pl. 5, 7, 8; Ins. Transf. p. 45; Samouelle's Ent. Cab. No. 2, f. 1.	10 to 14 .	Bluish green .
C. capitata, Fab. Pl. X. fig. 2.	*capitatus*, Fab.....	Cuv. An. Kingd.....	10 to 16 .	Hyaline, very iridescent.
C. maculata, Stephens, Pl. X. fig. 4.	.....	.....	10 to 11 .	Pale green, rufescent nervures.
C. ventralis, Curtis, Pl. X. fig. 6.	*punctifrons*, Steph. *cancellata*, Wesm.	Curt. Brit. Ent.	14 to 16 .	Pale yellowish.
C. fulviceps, Stephens, Pl. X. fig. 1.	*fulvocephala*, Sam.	Steph. Mand. 6, pl. 30, 2...	16 to 19 .	Rufescent ...
C. carnea, Pl. IX. fig. 6.	.....	.....	11 to 12 .	Rufescent, rosy, iridescent.

Legs.	Antennæ.	Eyes.	Particular Characters.	When found.	Where found.
Green	Green	Golden	Stigma darker	May, June ..	London, Kent, &c.
Greenish ..	Greenish	Brassy.	.....	June.....	London, Kent, &c.
Pale.....	Pale.....	Brassy.	Base of segments of body brownish.	June.....	London, &c.
Pale.....	Pale.....	Golden green.	.....	June.....	London, Kent, Lancashire, &c.
Pale.....	Pale.....	Golden	Two brown lines on thorax.	June.....	London.
Pale green, tarsi reddish.	Ochreous	Blue..	Wings short and rounded, black dot on basal joints of antennæ and on the head, and two streaks on the thorax.	June, July, August.	Dover, Devon, Wales, Berkshire, &c.
Pale green, tarsi reddish.	Reddish	Green.	Wings short and rounded.	June.....	London.
Green, tarsi reddish.	Reddish	Golden	Nervures of wings black, black line on the head and marks on the thorax.	June.....	London, Darenth, &c.
Pale.....	Black.....	Green.	.....	June.....	Hertford, Ripley, &c.
Pale.....	Reddish	Dark..	Wings rounded and short, head with spots on it before and behind the eyes, and marks on thorax.	June.....	Darenth.
Pale.....	Pale.....	Pale green.	Black dot between the antennæ, and two on thorax.	June.....	Darenth, &c.
Pale.....	Pale.....	Black.	Head bright fulvous, stigma elongated.	June, July ...	Darenth, New Forest.
Pale.....	Pale.....	Blue..	Head rosy, wings short and rounded, stigma rosy.	June.....	London, &c.

XXII. *Description and Notes upon some new and rare* Coleoptera. *By* F. J. S. Parry, F.L.S., *with a Plate.*

[Read 3rd January, 1848.]

Having lately received a small collection of *Coleoptera* from the island of Ceylon, (for the which I am indebted to my friend C. Whitehouse, Esq., a resident in that beautiful island,) containing several species new to our collections, I have been tempted to select for description and illustration several novelties, especially belonging to the family of *Cetoniidæ*, to which are added other rare species previously described but not illustrated, and as such they will, I trust, prove interesting to those members of the Society more especially devoted to the study of foreign *Coleoptera*.

Sp. 1. *Cicindela* (*Calochroa*) *Assamensis*, Parry. (Plate XI. fig. 1.)

The above insect I described, from my own collection, in vol. iv. p. 84 of the Society's Transactions; it has somewhat the appearance of the following new species I am about to describe; it is now figured for the first time.

Sp. 2. *Cicindela* (*Calochroa*) *Shivah*, n. sp., Parry. (Plate XI. fig. 2.)

Cicindela elongata, atro-picea, ænea; mandibulis latere externo supra flavis; thorace subquadrato, punctato rugoso, sulcis duobus transversis; elytris punctatis, maculis tribus flavis, maculâ humerali distinctâ fasciâque mediâ sinuatâ, ad suturam vergenti apicali lunatâ flavâ; corpus infra tibiis et tarsis concoloribus.

Long. corp. lin. 10, lat. corp. lin. 3.

This species bears a strong resemblance to *Cicindela Princeps*, described by Mr. Vigors in the Zoological Journal, p. 413, pl. 15, and now to be seen in the collection of the Zoological Society. Through the kindness of Mr. Mitchell I have been enabled to compare the two insects; *Calochroa Princeps* is of a much shorter and more rotundate form, having the apex of the elytra not nearly so much truncated, and a considerable difference in the form of the yellow spots, vide Pl. XI. fig. 2 A. Fig. 2 B represents the elytron of the species above described.

Sp. 3. *Protœtia Whitehousii*, Schaum. n. sp. (Ceylon).
(Pl. XI. fig. 3.)

Sp. 4. *Macronota quadrivittata*, Schaum, n. sp. (Ceylon).
(Pl. XI. fig. 4.)

The above are two new species from Ceylon, lately described from my collection by Dr. Schaum, in a paper read before the Society. Fig. 3 and 4 are figures of the original types, received by me from Ceylon.

Sp. 5. *Clinteria incerta*, Parry (an var. *Imperialis*, Schönh).
(Pl. XI. fig. 5.)

Nigra, pronoto maculis duabus, elytris utrinque duabus pallidis.
Long. corp. lin. $9\frac{1}{2}$, lat. corp. lin. 5.

The above is the exact description, with the exception of "elytris utrinque *tribus* fulvis" of Dr. Burmeister's *Clinteria imperialis*. The absence of the third spot on the shoulder of the elytra in this species, as well as its larger size, with the sternum more prolonged and the colour of the spots somewhat paler, forms the only difference between the two species; it may, however, prove to be only a variety, until other specimens are received to clear up the point; I have called it *incerta*, the accompanying figure at any rate will prove acceptable.

I must not omit to mention that Mr. Hope has described in the Transactions of the Zoological Society, under the name of *Macronota tetraspilota*, and lately refigured in the last number of our own Transactions as *Clinteria tetraspilota*, an insect very much resembling the above; but Mr. Westwood, having seen both specimens, informs me they are quite distinct, differing considerably as to the mesosternal process.

Sp. 6. *Diaphonia rugosa*, Schaum, (N. Holland.) (Pl. XI. fig. 6.)

This new and interesting species Dr. Schaum has lately described from my collection. The British Museum also possesses it.

Sp. 7. *Pygora lenocinia,* Dupont (Madagascar). (Pl. XI. fig. 8.)

For description of, vide Dr. Burmeister's Handbuch der Entomologie and Silberman's Revue Entomologique.

I have been tempted by the extreme beauty and rarity of this insect to introduce it here, accompanied by a figure, which I believe has not hitherto been published, and certainly its interesting form and splendid attire fully entitle it to your notice. Dr. Burmeister in his work mentions *four* species of the same group, all from Madagascar and very scarce.

Sp. 8. *Clinteria pantherina,* Parry, n. sp. (Pl. XI. fig. 9.)

C. purpureo-cuprea, supra opaca, pronoti punctis sex triangulo positis; elytrorum plurimis sparsis; abdomine subtus nitido, seriebus duabus macularum, pygidio rufescenti maculato.

Habitat Ceylon.

This species is allied to *C. Mærens* of Gory, &c., but is sufficiently distinct, according to Dr. Burmeister's description of it, to form a new species.

Genus Stigmodera.

Sub-Genus nov. Metaxymorpha, Parry (*μεταξυ*, between, *μορφη*, form).

Sp. 9. *Metaxymorpha Grayii,* n. sp. Parry (N. Holland). (Pl. XI. fig. 7.)

Atro-violacea, cyanea; thorace punctato, valde convexo, haud sulcato, postice punctis duobus profundis; elytris concoloribus, striis duodecim rugoso-punctatis, lateribus externis rubro sanguineo late limbatis apicem 3-dentatis; prosterno magno protenso et conico; antennis pedibusque cyaneis æneis, scutello magno rotundato.

Long. corp. lin. 15, lat. corp. lin. 6.

I am unacquainted with the exact locality of this new and interesting addition to our Australian *Fauna.* It was lately received by me in a small collection from that country, in which were also specimens of that splendid insect *Calodema Kirbii,* so that probably it is to be found in the same locality.

Not only is this new species remarkable for its form and colour, but is especially interesting as forming an important connecting link between the other Australian species of *Stigmodera* and the

South American division of the same group, formed into a separate family by Eschscholz, under the name of *Conognatha*.

The only two species of New Holland *Stigmodera* I am acquainted with, bearing any resemblance to it as to form and character, are *Stigmodera Jaquinoti* of Gory, and *Calodema Kirbii* of Hope. It partakes of the somewhat attenuated and rather convex form, with strongly spinose apex of the former, but differs in having the thorax more convex, with the sternum prolonged in a most remarkable manner (vide fig. 7 *a*); the apex of each elytron is also of a different form, having *three* spines (vide fig. 7 *b*) instead of *two* (vide fig. 7 *c*).

It agrees with *Calodema* only in having the prosternum prolonged (but in a more conical form, vide fig. 7 *d*), and spinose apex of elytra, but having, as I have before mentioned, three spines instead of two (vide fig. 7 *e*). And here let me mention that the only New Holland species of *Stigmodera* with which I am acquainted possessing the lengthened prosternum are the present new species and *Calodema Kirbii*, whereas the South American division *Conognatha* possesses it with one or two exceptions in a remarkable manner; with regard however to the *six* distinct spines at the apex it stands alone, and as such forms a peculiar feature in this new sub-division.

Upon the whole it certainly bears a greater affinity to the South American division; but differing as it does in several respects, and coming from another country, I have thought it expedient to make it the type of a new sub-division, under the name of *Metaxymorpha*, derived from the Greek μεταξυ, between (to express intermediate or connection), and μορφη, a form: and have much pleasure in naming this new insect after my friend J. E. Gray, Esq., F.R.S., of the British Museum, for whose kindness and attention on my frequent visits there I feel greatly indebted.

Sp. 10. *Trictenotoma Templetonii*, ♂ Westwood, ♀ Parry.

Nigrum, supra luteo-albidoque pubescens; mandibulis transverse rugosis; antennis pedibusque maculis duabus elevatis politis pronoti nigris, lateribus angulatis pronoti nigris. ♀.

Long $2\frac{1}{2}$ inches.

Habitat Ceylon.

The male of this new species of *Trictenotoma* was lately described by Mr. Westwood in his publication on Oriental Entomology, (vide pl. 23 of that work,) it having been sent to him from the island of Ceylon by R. Templeton, Esq., in whose

honour it was named. I have now the pleasure of submitting to your notice the ♀ of the above species for the first time; it was received lately by me from Ceylon in the collection already spoken of.

With the exception of being altogether wider in form, and the material difference as to the shape of the mandibles, which are much shorter, resembling those of *Trictenotoma Childrenii*, there is nothing particular to distinguish it from the ♂.

It differs from the ♀ of *Childrenii* in having, as stated, transverse rugose mandibules, longer antennæ, a black stripe down the thorax, and the last segment of the abdomen much shorter, not carinated, and less notched at the tip; the mesosternal process is also materially different.

EXPLANATION OF PLATE.

Pl. XI. fig. 1. *Cicindela (Calochroa) Assamensis*, Parry.
2. *Cicindela (Calochroa) Shivah*, Parry.
3. *Protætia Whitehousii*, Schaum.
4. *Macronota quadrivittata*, Schaum.
5. *Clinteria incerta*, Parry.
6. *Diaphonia rugosa*, Schaum.
7. *Metaxymorpha Grayii*, Parry.
8. *Pygora lenocinia*, Dupont.
9. *Clinteria pantherina*, Parry.

XXIII. *Extract of a Letter from* Capt. Thomas Hutton, H. E. I. C., *to* J. O. Westwood, Esq.

[Read November 1st, 1847.]

Mussooree, Himalaya Mountains.
28th July, 1847.

My dear Sir,

I have long contemplated writing to you, and now that the last mail has brought me the intelligence that you have been kind enough to honour me by naming the new *Bombyx* after me, I cannot allow the post to go out without expressing to you my best thanks for your attention and remembrance of me.

I have nearly made up my mind to make a run home for one year, and in that case shall bring the few insects I have by me, and trust there may be some more novelties worthy of your attention. In the mean time I must tell you that I have again this year reared specimens of *Actias Selene*, and observed attentively the method by which it *cuts* its way through the cocoon; and there can be no doubt of the correctness of my former observations in regard to the wing spur, from which I derived the name "*Plectropteron*," a name which I think, from the novelty of the circumstance, may still hold good, and the species would therefore stand as *P. Selene*, my *P. Dianæ* sinking into a synonyme; it is, as I formerly observed, most probable that *Actias luna* possesses the same spur; and the new species lately sketched in the Annals and Magazine of Natural History, under the name of *A. Mœnas*, most probably possesses it likewise, in which case there would be three species so armed, and forming a good genus characterised as *Actias*, with the addition of the wing spur; and at all events the characters of *Actias* must be remodelled, before *A. Selene* can find a place in it.

The habitat of *A. Mœnas* is very confusedly given in the Magazine of Natural History, it being stated the species is from Sylhet, and yet that it is from "Northern India." Sylhet is to the eastward, not northward.

Let me now call your attention more particularly to the instrument which I have named "the wing spur;" that instrument is not the part you thought I alluded to in my notice of the insect, but is totally distinct from it, and projects from the *joint* of the *wing*. The part you alluded to, viz. the tippet, (tegula or ptery-

goid), I have detached, and placed separately a spur and a wing in the inclosed paper. And you will still see, on the shoulder joint of the wing, a *strong*, *hard*, *black spur*, with a sharp point and cutting edge. The point of this instrument is thrust through the cocoon, and the cutting edge drawn across the fibres, until severed sufficiently to enable the moth to come forth. Place the wing horizontally before your eye, and look from the anterior edge along the apex, and the spur will be visible.

Of the "*Bombyx Huttoni*," I will bring home specimens of the perfect insect, and also their eggs, in order that you may see the caterpillars. Cocoons and samples of the silk wound off also.

I hope the *Actias* may be worthy of notice in your new work, which I have not yet had an opportunity of seeing; and that you will give dissections of the wing, in order to show the spur. If I can get some autumn cocoons I will bring them or send them, in order that you may see the process, and *seeing believe!*

Cheirotonus Mc Leayii is not a rare insect, although a very local one. Several occur in private collections here, but I cannot get them. I have one male slightly injured in the elytra, and a diminutive male. It is a sap feeder, and may be seen in company with crowds of stag beetles, sucking up the juice as it flows from wounds in the trees. They breed in decaying oak trees (*quercus incana*). I sent you a notice of some butterflies long since, which I hope you received.

XXIV. *Descriptions of some new Species of* Mydasidæ, *from Western Australia, by* J. O. Westwood, F.L.S.

[Read December 6th, 1847.]

The species of the family *Mydasidæ* described in the works of continental authors are natives of America, the south of Europe, and the east and south of Africa, only one species, *M. ruficornis*, having been described by Wiedemann as a native of Tranquebar. In the synopsis of this family which I published in 1841, in the first volume of my "Arcana Entomologica," I described several species from New Holland, namely, *M. auripennis*, *M. viduatus*, *M. stenogaster*, and *M. bicolor*, *Cephalocera maculipennis*, and the three supposed species of *Apiocera*. It is an interesting peculiarity in Entomo-geography to find this singular group of insects, whose metropolis is evidently South America, appearing in New Holland, where, however, it appears to be very rare.

Since the publication of the above-mentioned synopsis, I have become acquainted with several additional Australian species of this group, of which I now beg to offer the descriptions to the Entomological Society.

Mydas melleipennis, Westw. (Plate XIII. fig. 1.)

Mydas niger, marginibus thoracis cum scutello pedibusque fulvis, femoribus posticis clavatis; alis fulvis, venis rufo-fulvis; antennis elongatis nigris, articulo basali subrufo; abdomine elongato gracili, nigro, nitido, segmentis basalibus utrinque flavo-maculatis. ♀.

Expansio alarum 1½ unc.

Habitat in Australia occidentali. Comm. Ince.

This is a very distinct species; the head is transverse, and clothed, especially in front, with luteous hairs; the eyes black; the hypostoma prominent and fulvous; the haustellum nearly as long as the depth of the head; antennæ black, moderately long, last joint broad, basal joint varied beneath and near the extremity with red; the thorax black, the callosities at the anterior angles as well as the sides, scutellum and postscutellum dark fulvous; on each side before the insertion of the halteres is a short thick spine; the abdomen is long, narrow, and cylindrical in the female; the basal segment is transverse, glossy, and pitchy-coloured; the second joint is obconic, truncate, glossy, black, with a large yellow

spot on each side; the third joint is slightly constricted at the base; it is marked, as well as the fourth joint, with a yellow spot on each side, diminishing in size; the three following joints are black, glossy, and cylindric, and the last joint is ob-conical, terminated by an appendage, which is shortly spinose on each side. The legs are fulvous; the hind femora clavate, and finely spined. The wings are fulvescent, with dark fulvous veins. The arrangement of the veins offer several peculiarities, which exist also in the following species, but not in other insects of the genus. The body beneath is black; the second abdominal ventral segment with a fulvous fascia, and the third with two fulvous spots.

Fig. 1. The insect slightly magnified; 1 *a*, the head and base of the antenna seen sideways; 1 *b*, the proboscis and its palpi more highly magnified.

Mydas bispinifer, Westw. (Plate XIII. fig. 2.)

Mydas niger, thoracis lateribus cum scutello rufo-fulvis; abdomine maris elongato angusto clavato, articulis basalibus utrinque flavo-maculatis; alis versus costam fusco-tinctis, venis nigris; pedibus pallide flavis; femoribus posticis clavatis. ♂ ♀

Expansio alarum 10—13 lin.

Habitat in Australia occidentali.

In Mus. Ince et Saunders.

The male of this species has somewhat the appearance of a large elongated Conops. It agrees with the preceding species in the peculiar arrangement of the veins of the wings, and in the radiated appendage at the extremity of the body of the female. The head is black, clothed in front with slight grey pubescence, the nasus rather produced and obliquely truncate. The mouth of one of the specimens examined presented the two slender filiform setose palpi, and the slender horny seta at the base, as represented in fig. 2 *a* ** and †; the proboscis itself was porrected and as long as the head. The antennæ are black, about three times as long as the head, with the last joint flattened and pear-shaped. The thorax is black, with the sides and two tubercles at the anterior angles obscure red; the scutellum is of the same colour, the hind part of the thorax being black. The sides of the mesothorax, before the halteres, are produced into two short black porrected spines. The abdomen is long, and much narrowed in its basal half; it is black, with the four anterior segments marked on each side with a pale yellow spot; the terminal ventral

segment is armed with two horny lobes (fig. 2*b* **), and with two curved hairy filaments (2*b* ††). The legs are pale yellow, with the middle of all the femora and the apical half of the posterior tibiæ black. The hind femora are clavate and serrated beneath. The wings are very slightly tinged with brown, having the costa and the space along the two chief veins rather more clouded with brown. The fourth longitudinal vein, which is furcate towards the extremity of the wing, is suddenly deflexed at a little distance in front of the furcation, crossing the next vein at right angles, being connected with the anterior branch of the basal cell (which branch, in the majority of the species of the genus, extends beyond the spot where the fourth longitudinal vein is connected with the fifth). The halteres are white.

The female of this species differs from the male in having the abdomen long and narrow, but not narrowed at the base, being of nearly equal width throughout; and the joints being rather widened beyond the middle. The terminal segment is black, the second and third with a large fulvous yellow spot on each side, and the three succeeding segments with a broad fulvous yellow fascia.

The last segment is terminated by a rounded appendage, each side of which is armed with six short blunt spines. (Fig. 2*c*, 2*d*.) The wings (or rather wing, as the only specimen of this sex which I have seen possesses only one wing) differs from the male in having the cell formed by the fourth longitudinal vein of the wing closed and appendiculated at the tip. (Fig. 2*e*.)

Fig. 2. The male insect magnified; 2*a*, the head seen sideways; 2*b*, the extremity of the male abdomen from beneath; 2*c*, the extremity of the female abdomen, seen from above; 2 *d*, the same, seen from beneath; 2*e*, portion of the veins of the wing of the female.

Mydas sordidus, Westw. (Plate XIII. fig. 3.)

Mydas opacus, niger; antennis brevioribus, apicibus rufis; segmentis abdominis basi utrinque macula parva triangulari lutea; pedibus piceo-rufis; femoribus posticis obscuris; alis limpidis, venis nigris. ♀

Expansio alarum fere 1¾ unc.

Habitat prope Adelaidam, Australiæ occidentalis. D. Fortnum. In Mus. Hope.

The head is black, with the nasus obscure fulvous, rounded, rather prominent and obliquely truncate above the mouth; the face is clothed with grey hairs. The antennæ are shorter than in

many of the species, and slender, with the last joint pear-shaped and red, the base being black. The proboscis is short. (Fig. 3*a*.) The thorax is obscure black. The abdomen is of equal length and continuous with the thorax, tapering beyond the middle; it is obscure black, slightly glossy, especially at the extremity of the segments. The second and three following segments are marked on each side at the base with a triangular obscure fulvous spot; the two terminal segments are dark castaneous, with the penultimate one black on its hind margin: on the underside the abdomen has the base of each segment fasciated with fulvous. The legs are obscure pitchy red, with the posterior femora moderately clavate and serrated and almost black, except at the base and extremity. The wings are almost limpid, with slender pale brown veins. The upper branch of the fourth (furcate) longitudinal vein emits a very short branchlet directed towards the base of the wing, and the lower branch extends to the costa. The apical appendage of the abdomen is retracted within the apex in the only specimen of the female which I have seen.

Fig. 3. The insect slightly magnified; 3*a*, the head seen sideways.

Mydas limpidipennis, Westw.

Mydas niger, facie griseo-setosa, (antennis mutilis,) thorace nigro opaco; abdomine dilatato subconvexo, segmento primo nigro, griseo parum hirto, 2do et 3tio nigris utrinque ad basin macula minima albido-lutea notatis, 4 apicalibus piceis; pedibus rufo-piceis, alis perlimpidis, venis pallidis. ♀

Expansio alarum 1½ unc.

Habitat in Australia occidentali.

In Mus. D. Saunders.

This species is nearly allied to the preceding. The head is black, including the nasus, which is but very slightly prominent, the face is clothed with grey hairs. The proboscis is short, the antennæ are broken off in the only specimen I have seen of the female. The thorax is black and opaque, the halteres are black at the tips. The abdomen is as broad as and continuous with the thorax at the base, the middle joints being still wider, and the apical joints are gradually attenuated; the basal segment is black, and slightly clothed with grey pile; the two following segments are black, each with a minute luteous buff spot on each side, and the four terminal segments are pitchy and rather glossy, and punctured. The abdomen beneath is black, very glossy, and margined. The legs are entirely of an obscure pitchy reddish

colour, the posterior femora but slightly clavate and serrated beneath. The wings are quite limpid, with the veins very slightly tinged with brown. The veins are arranged as is described in the last species. The abdomen is terminated by a retractile appendage, armed with a radiating series of pale-coloured setæ.

XXV. *Descriptions of some new Exotic Species of* Acroceridæ (Vesiculosa, *Latr.*), *a Family of Dipterous Insects.* *By* J. O. Westwood, Esq. F.L.S.

[Read January 3, 1848.]

The family, whereof I propose in the present paper to describe a number of new species, is remarkable for the singularly swollen body, and more particularly abdomen, of nearly all the species, whence Latreille gave to the group the sectional name of *Vesiculosa*. This peculiarity does not exist alone in this family of insects, since we meet with various analogous resemblances in other orders of insects, and indeed in other tribes of animals. Among the *Coleoptera* there is the genus *Chactas* amongst the *Melyridæ*, and some Heteromerous genera, remarkable for their very swollen elytra. Amongst the *Homoptera* there is also a very remarkable genus of *Cicadidæ* from New Holland, figured by me, in the "Arcana Entomologica," under the name of *Cystosoma Saundersii*. There are also some Orthopterous genera, and many Homopterous, in which the scutellum is dilated and swollen, concealing the wings and abdomen; as well as some *Crustacea*, such as the crab-genus *Hymenosoma*, and some fishes, which are similarly swollen.

The naturalist will do well not to overlook these kinds of analogies, and they require to be stored up for future use. To attempt in the present state of science to apply them fully and fitly is a vain effort of skill.

Of the singular family *Acroceridæ* I believe nothing is still known of their habits; the species are everywhere very scarce, and no observation has hitherto been made of their transformations. The genera are but few in number, but the species are distributed over the greater portion of the globe. I do not however remember any Asiatic species, although African, Australian,

North and South American, as well as European, are known. The species are but of small size, none exceeding our large blue-bottle fly in size.

PSILODERA.

Psilodera affinis, Westw.

Ps. lutea, thoracis plaga lata dorsali antice subito angustata ænea, abdomine supra saturate fusco-testaceo, villoso, segmentis tribus basalibus macula media nigra, ad basin haud dilatata.

Long. corp. lin. $4\frac{1}{2}$, expans. alar. lin. 11.

Habitat apud Caput Bonæ Spei.

In Mus. nostr.

Ps. validæ affine. Caput nigrum. Antennæ flavæ, articuli 2di apice nigro. Thorax luteo-fulvus, pube erecta fulva hirtus, plaga media dorsali antice subito angustiore ænea supra scutellum, maculis duabus obscure testaceis ad marginem posticum thoracis dorsi extensis, notatus. Abdomen supra fusco-testaceum, pube pallidiori hirtum, segmentis tribus basalibus macula nigra basali, 1ma basi haud dilatata; infra obscure flavescens. Pedes omnino flavi. Alæ hyalinæ. Proboscis nigra, seta dorsali et basali albida.

Psilodera capensis, G. R. Gray, An. K. Ins. pl. 128, f. 4.

Ps. thorace et scutello omnino luteo-pubescentibus, capite nigro, proboscide nigra, supra fulva, pedibus pallidis; abdomine rufo-fusco, luteo-albido fasciata.

Long. corp. lin. $4\frac{1}{3}$, expans. alar. lin. 8.

Habitat apud Caput Bonæ Spei.

In Mus. Britann.

An *Cyrtus fasciatus*, Wied.? E *Ps. valida* certe distinctæ.

LASIA.

Lasia flavitarsis, Erichson.

Syn. *Panops flavitarsis*, Wiedemann, Macquart.

Lasia amethystina, Perty.

Beris? violacea, G. R. Gray. In Griffith's An. K. Ins. pl. 114, fig. 2.

Hæc species magnitudine valde variat. Individuum Pertianum lineas $4\frac{3}{4}$ habet; Wiedemanni 5 lineas, et proboscidem 6 lineas. In Museo D. Hope individua 2 extant, lineas $5\frac{1}{2}$—$6\frac{1}{4}$ longitudine corporis, proboscidis $9\frac{3}{4}$ lin., et expans. alar. 12—$13\frac{1}{2}$ lin. habentia. Antennæ fuscæ, articulo ultimo basi pallido, venæ intermediæ longitudinales marginis postici alarum ad marginem ipsum haud extensæ.

Lasia auricoma, Westw.

Las. cæruleo-viridis nitida, thoracis dorso cupreo, abdominis segmentis apicalibus aureo-pilosis, pedibus nigris, tarsis luteis.

Long. corp. lin. $5\frac{1}{2}$, expans. alar. lin. 12.

Habitat in Brasilia.

In Mus. nostr. Communic. D. Sells.

Oculi picei, luteo-villosi, ocelli haud prominuli. Thorax aureo-viridis, luteo-villosus, plaga magna fere totum dorsum occupante ænea, posticè cuprea, margine omni læte purpurea. Scutellum et abdomen cæruleo-viridia, parum villosa, postice tamen in medio segmentorum aureo-pilosa. Femora ænea, geniculis piceis. Tibiæ piceæ, luteo-pilosæ. Tarsi lutei. Tegulæ chalybeæ. Alæ fuscescenti-hyalinæ, venis nigris, venæ intermediæ marginis postici ad marginem ipsum extensæ.

Lasia rufipes, Westw.

Las. ænea, thorace abdomineque valde luteo-pilosis, pedibus alarumque venis costalibus testaceis.

Long. corp. lin. $4\frac{3}{4}$. Long. probosc. lin. 6. Expans. alar. lin. 11.

Habitat in Brasilia. D. Miers.

Oculi picei, luteo-subvillosi. Antennæ basi nigræ (apice deterito). Proboscis nigra, basi supra chalybæo, seta dorsali brunnea. Caput postice æneo-viridi, regione ocellorum vix elevato. Thorax subcupreo-æneus, luteo dense pilosus. Abdomen etiam densius luteo-villosum, basi segmentorum posticorum (magis subcupreo) tantum apparente; abdomen subtus nitidissime purpureum. Pedes testacei. Alæ hyalinæ, vix infuscatæ; venis basalibus et costalibus testaceis. Tegulæ luteæ.

Philopota.

Philopota maculicollis, Westw. (Lond. and Edin. Phil. Mag. 1835.)
(*Philopota vidua*, Erichson's Entomog. p. 153.)

In individuo nostro color corporis nigro-piceus, nec brunneus; facies angusta, inter oculos albida, e sericie tenuissima argentia. Proboscis flava, apice brunnea; prothoracis dorsi angulis posticis productis, et extremo apice ferrugineo; mesothorax punctis duobus minutis anticis alterisque duobus cuneatis supra basin alarum ferrugineis. Abdominis piceo-nigri margo lateralis tenuis, infra pallidè flavus. Femora nigra, basi rufa,

apice lutea-brunneo. Tibiæ posticæ extus pallidæ flavæ. Alæ infumatæ, dimidio postico pallidiori.

Long. corp. lin. $4\frac{1}{2}$ (nec $5\frac{1}{2}$), expans. alar. lin. 12.

Habitat in Brasilia. D. Swainson.

In Mus. nostr.

Philopota conica (*nitida*, Westw.)

Individuum hujus speciei, in Musæo D. Hope, characteribus sequentibus distinguitur: forsan species distincta.

Caput nigrum, facie albo-sericanti, acumine albido. Proboscis fere corporis longitudine albida, apice fusco. Mesothoracis dorsum flavum, disco lato nigro, antice subito angustiore; linea laterale tenue flava super basin alarum relicta. Prothoracis pleuræ flavo-maculatæ. Mesothorax valde elevatus, lateribus ante alas utrinque macula flava. Abdomen elongato-conicum, nitidum punctatum, segmenti 1mi margine postico tenui flavo, segmentis 2 et 3 macula transversali laterali marginis postici cum margine laterali omni flavis. Coxæ brunneæ. Femora nigra, basi brunneo, apice albido. Tibiæ albidæ, subtus nigricantes. Alæ fuscescentes, antice vix obscuriores.

Obs.—Individua duo a cel. Macquartio in "Diptères Exotiques," pars 2, pp. 171, 172, ut varietates *D. conicæ* descripta, meo judice, ad species distinctas pertinent.

Philopota liturata, Westw.

Ph. brunneo-nigra, prothoracis margine antico et postico, mesothorace utrinque linea flexuosa flavis, alis fusco-hyalinis, abdomine subopaco punctatissimo.

Long. corp. lin. $3\frac{1}{2}$, expans. alar. lin. 7.

Habitat in Brasilia. D. Swainson.

In Mus. D. Hope.

Statura et summa affinitas *Ph. nitidæ*, differt tamen colore magis brunneo, thoracis minus elevato, prothoracis margine antico et postico flavis. Mesothorax utrinque linea tenui flexuosa flava, ad basin scutelli ducta. Prothoracis et mesothoracis pleuris notatis macula flava. Abdomen elongato-conicum (minus tamen elongatum quam in specie præcedenti), subopacum, punctatissimum, punctis tamen minoribus quam in præcedenti, segmentis posticis tenuissime sericeis; tribus basalibus margine postico tenui flavo, (in 2do et 3tio medio interrupto), margine omni laterali flavido.

An *Philopotæ ovatæ* mas?

Philopota tuberculata, Westw.

Ph. nigra luteo-villosa, mesothorace postice bituberculato, abdominis basi utrinque luteo; alis fusco-hyalinis, dimidio antico fusco.

Long. corp. lin. 3, expans. alar. lin. 7.

Habitat in Brasilia. D. Miers.

Species distincta. Caput nigrum, oculis griseo-hirtis, facie albido-sericea, acumine pallido. Proboscis corpore e tertia parte brevior, albida, apice fusco. Thorax niger, luteo-villosus, prothoracis loborum dorsalium angulis rufo-piceis. Mesothorax valde elevatus; disco postice quadrato-elevato, vel potius in tuberculis duobus producto. Scutellum gibbum, aureo-pilosum. Abdomen conico-ovatum, nitidum, punctatum, longius nigro-hirtum, segmentis 2, 3 et 4 utrinque macula magna triangulari communi lutea, abdomen subtus luteum. Femora piceo-nigra, apice luteo. Tibiæ pallide luteæ, subtus vix obscuriores. Tarsi luteo-fulvi, unguibus nigris. Alæ fusco-hyalinæ, costa late fusca, usque ad venam 2dam posticam (5am longitudinalem) et ad apicem alæ extensa; vena 4ta longitudinalis (ramo interno furcæ), fere ad apicem alæ extensa; vena sexta sinuata ramos duos parvos emittit, versus basin alarum, extensos, uno paullo ante apicem alteroque apicali.

Philopota ovata, Westw.

Ph. brunnea punctatissima, thorace, abdomineque basi lineis flavis notatis, alis fusco-hyalinis, costa late fusca.

Long. corp. lin. $3\frac{1}{2}$, expans. alar. lin. 8.

Habitat in Brasilia. D. Swainson.

In Mus. D. Hope.

Ph. lituratæ affinis. Brunneo-nigra, opaca. Caput nigrum, punctatissimum, facie albo-sericea, acumine albido. Prothorax margine antico et postico tenui flavo. Mesothorax mediocriter elevatus, utrinque linea tenuissima flexuosa flava ad basin scutelli extensa, pleuris prothoracis puncto et mesothoracis macula majori ante alas flavis. Abdomen conico-ovatum, opacum, tenuissime punctatissimum, margine postico tenui segmenti 1mi flavo, segmento 3tio et sequentibus basi nigricantibus; margine omni laterali tenui albido. Femora nigra, apice albido. Tibiæ albidæ, subtus piceæ. Tarsi picei. Alæ fusco-hyalinæ, costa latè fusca ad venam 2ndam posticam extensa, apice ipso hyalino.

Philopota histrio, Erichson.

Individuum hujus species vidi, cujus color generalis corporis est æneo-niger nec brunneus; prothoracis flavi lateribus vitta tenui nigra ad basin alarum extensa et cum margine tenui antico nigro mesothoracis litteram M formante. Coxæ anticæ flavæ. Aliter cum descriptione cel. Erichsonii congruit.

Long. corp. fere lin. 4.

Habitat in Brasilia. D. Miers.

Individuum alterum etiam vidi, cujus prothoracis dorsum est nigrum, margine postico tenui litteram V. referente, angulisque anticis lateralibus flavis maculis posticis mesothoracis margineque postico scutelli luteo-ferrugineis; abdominis segmentis basalibus margine postico flavo in medio interrupto; duobus apicalibus nigris; femora antica subtus albida. Magnitudo præcedentis. Brasilia. D. Miers.

PTERODONTIA.

Pterodontia flavipes, G. R. Gray, in Griffith, An. Kingd. Insects, pl. 128, fig. 3, part 34, p. 779.

[Nec *Pt. flavipes*, Macquart, Dipt. exot. 1, 175.]

Pt. nigra, scutello abdomineque testaceo, basi maculisque dorsalibus nigris, pedibus pallidis, femoribus quatuor posticis nigris.

Long. corp. lin. 4, expans. alar. lin. $8\frac{2}{3}$.

Habitat in Georgia Americæ.

In Mus. Britann.

Affinis *Pt. Virmondii*, Erich. Caput et thorax nigra, nitida, nigro-villosa. Mesothorax lateribus postice scutelloque testaceis. Abdomen segmentis duobus basalibus (1mo brevissimo) nigris; reliquis fulvo-testaceis, rufo-villosis; 3tio vitta media antice et postice dilatata; 4to et 5to macula media basali, nigris. Tegulæ fusco-nigræ, nitidæ. Pedes pallidi, luteo-albidi, tarsorum apice et unguibus obscuris, femoribus quatuor posticis nigris. Alæ pallide luteo-hyalinæ. Costa nonnihil obscuriori, venis pallidis, costalibus et basalibus, paullo obscurioribus. Alarum venæ ut in *Pt. Mellii* dispositæ.

Obs.—M. Macquart states that the figure given of the wing of *Pterodontia*, in the Suites à Buffon, Dipt. pl. 20, fig. 5, is copied from the Animal Kingdom; it is however very inaccurate: neither

is the engraving in the English work quite correct nor agreeable to my original drawing, from which it was engraved.

Pterodontia Macquartii, Westw.

Pt. atra, scutello abdominisque lateribus rufis, pedibus flavis, femoribus anticis nigris.
Long. corp. $3\frac{1}{2}$—$4\frac{1}{2}$ lin.
Habitat in Nova Hollandia.
In Mus. Reg. Paris.
Syn. *Pterodontia flavipes*, Macquart, Dipt. exot. 1, p. 175.
An var. *Pt. Mellii*, Erichs.?

Pterodontia analis, Westw.

Pt. nigra, segmentis apicalibus abdominis fulvis, alulis margine nigricantibus, alis hyalinis, venis albidis, pedibus pallidis.
Long. corp. lin. 2, expans. alar. lin. 5.
Habitat in Georgia Americæ.
In Mus. Britann.

Nigra, nitida, nigro-villosa, tenuissime punctata. Caput nigrum, oculis postice brunneis. Antennæ prope os insertæ, articulo terminali gracillimo brevi, apice clavato setigero. Thorax cum scutello niger. Abdomen hæmisphericum, segmentis duobus basalibus maculaque media ad basin segmenti sequentis nigris. Tota pars abdominis relicta apicalis fulva. Alæ hyalinæ, iridescentes, transversim rugosæ. Venæ albidæ distinctæ, area discoidali sub apicem alarum postice aperta. Tegulæ fuscescentes, marginibus nigricantibus. Pedes albidi, femoribus basi obscurioribus, unguibus nigris.

Acrocera.

Acrocera nigrina, Westw.

Acr. nigra, nitida, tenuissime punctata; punctis duobus minutis ad marginem posticum penultimi segmenti margineque tenui segmenti ultimi albidis; pedibus obscure luteo-albidis, femoribus tibiisque in medio obscurioribus; alis fusco pallide tinctis, venis piceis distinctis; alulis fusco-marginatis.
Long. corp. lin. 2, expans. alar. lin. $6\frac{1}{2}$.
Habitat in Georgia Americæ.
In Mus. Britann.

Acrocera unguiculata, Westw.

Acr. nigra, abdomine fulvo, basi maculisque nigris, pedibus albis, unguibus nigris; alarum venis fere obsoletis.

Long. corp. lin. $1\frac{1}{2}$, expans. alar. lin. 4.

Habitat in Georgia Americæ.

In Mus. Britann.

Caput et thorax nigra, hoc antice utrinque puncto minuto luteo, postice aureo-villoso, mesothoracis lateribus luteis. Abdomen fulvum; basi, lateribus segmentorum duorum basalium, macula angulata in medio ad basin alteraque ad basin segmentorum duorum proximorum nigris; corpore subtus halteribus pedibusque albidis, unguibus magnis nigris. Alæ hyalinæ albæ, venis fere indistinctis, costa tamen paullo obscuriori.

Acrocera subfasciata, Westw.

Acr. nigra, thorace utrinque maculis duabus cuneiformibus fulvis; abdomine fusco, segmento 1mo ad apicem maculis duabus transversis, 2do fascia apicali utrinque abbreviata luteis; alteris terminalibus luteo-marginatis.

Long. corp. lin. $1\frac{1}{2}$, expans. alar. lin. $4\frac{1}{2}$.

Habitat in Novo Eboraco.

In Mus. Britann.

Caput et thorax nigra, hoc antice maculis duabus cuneiformibus fulvis, spiraculis albidis, mesothoracis lateribus postice albidis. Pedes albidi, unguibus nigris. Alæ hyalinæ, venis pallide fuscis; costa paullo obscuriori.

Acrocera fumipennis, Westw.

Acr. nigra, nitida, alis hyalinis, versus basin fusco-infumatis, venis versus basin obscuris ad apicem tamen fere obliteratis, alulis fuscis, pedibus albidis.

Long. corp. lin. $1\frac{1}{2}$, expans. alar. lin. 4.

Habitat in Georgia Americæ.

In Mus. Britann.

Acrocera bulla, Westw.

Nigra, abdomine albido, basi, (in medio dentata,) fascia ad basin 2di segmenti, maculaque media ad basin 3tii anoque nigris, pedibus albidis, unguibus nigris, alis hyalinis, costa venisque fuscis.

Long. corp. lin. $2\frac{1}{2}$, expans. alar. lin. $5\frac{3}{4}$.

Habitat in Novo Eboraco.

In Mus. Britann.

XXVI. *Note on a Variety of* Segetia Xanthographa. (Pl. XIV. fig. 1.) *By* J. W. Douglas, Esq.

[Read 6th March, 1848.]

At the meeting of this Society on November 1st, 1847, I exhibited a most curious specimen of this moth, taken near Manchester, and sent to me by Mr. Edleston. On the right side the wings present the usual appearance of the species, but on the left the upper wing has only a broad stripe of brown on the costal portion, the rest of it being luteous, with a few dark marks, and the lower wing being dark, with a broad luteous dash running down the centre. It is a most singular deviation from the normal appearance of this moth, and has been most ably drawn by Mr. Wing, to whose figure I beg a reference, as giving a better idea of the insect than any description I can make.

What may have been the cause of this variation I am unable to say decisively, but some observations reported to the Entomological Society of France by M. A. Pierret,* will, I think, throw some light on it. He says, that of several species of *Lepidoptera* which ordinarily have the wings red, varieties occur in which that colour is replaced by yellow. He instances *Sphinx Dahlii*, *S. Euphorbiæ*, *Zygæna Achillea*, *Z. Fausta*, and *Z. Onobrychis*, *Euchelia Jacobeæ*, *Chelonia Caja*, *C. Hebe*, and *C. purpurea*, *Callimorpha Hera* and *C. dominula*. He says the reverse of this never takes place, with the single exception of *Callimorpha donna*, in which the yellow of the under wings is sometimes replaced by red; but in this case he thinks, that as *C. donna* is really only a variety of *C. dominula*, the apparently accidental red is properly a return to the typical colour. He then concludes, that every yellow variety of a red type is caused by an arrest of the elaboration of the colouring matter of the perfect insect, resulting either from the imperfect or improper nutrition of the caterpillar, or from the influence of atmospheric agents while in the pupa state.

I think that if this theory be correct, that it may account for the variation of the species now before us, although this differs from the examples quoted by M. Pierret, inasmuch as the typical colour is not red, and the yellow variation is on one side only.

* Annales de la Société Entomologique de France, 1847. Tome 5, Bulletin, page lxxii.

XXVII. *Sketch of the Genus* Pœcilocoris, *belonging to the Hemipterous Family* Scutelleridæ. *By* W. S. Dallas, Esq.

[Read 3d April, 1848.]

In a paper in the third volume of the Transactions of the Entomological Society, at p. 84, Mr. White proposed the division of *Tectocoris*, Hahn, into two genera, retaining the name *Tectocoris* for that section which contains Hahn's type (*T. cyanipes*, Fab.), and proposing that of *Pœcilochroma** for the other, containing *Cimex Drurœi*, Lin., and some allied species. The genus *Scutellera*, of Amyot and Serville, corresponds exactly with *Tectocoris* as above restricted, but those Entomologists have established no generic group to which the species forming the present genus can be referred.

As Mr. White, in the paper quoted above, did not fully characterize this genus, it may be as well here to give its distinctive characters at length.

Genus Pœcilocoris, (*Pœcilochroma*, White).

Cimex, Linn.; Drury; Fab. olim. *Tetyra*, Fab.; Burm. *Scutellera*, Guér.; Burm.; Germ.; H. Schäffer. *Tectocoris*, Hope. *Pachycoris*, H. Schäffer.

Body ovate, convex. *Head* (Pl. XIII. fig. *a*) rather large, broad, the lateral margins sinuated before the eyes. *Antennæ* (fig. *a*) about half the length of the body, of five joints; basal joint short, robust; second, shorter and thinnest; third, fourth and fifth, each as long as, or longer than the two basal united, nearly equal, compressed, broad, and furrowed longitudinally on the sides. *Rostrum* generally passing the second segment of the abdomen, in some species extending nearly to its apex. *Scutellum* slightly truncated at the apex. *Abdomen* (fig. *b*) with a more or less distinct furrow beneath; the three penultimate segments in the male not bearing the dull space on each side which exists in *Tectocoris* (fig. *c*), and the anal plate, in the same sex, simple, consisting only of one piece, which has its extremity sinuated, and fringed with hairs.

* As I have been informed, since this was read, that the generic name *Pœcilochroma*, applied to this genus by Mr. White, had been previously employed in *Lepidoptera*, I have, with that gentleman's concurrence, changed his name for that which stands at the head of this paper.

The species bear a striking resemblance, in the arrangement of their colours, to many of the species of *Coccinella*, being mostly yellow, orange or red, spotted with black or violet; they correspond also in their tendency to variation, the spots sometimes increasing in size, until, becoming confluent, they cover nearly the whole surface, sometimes disappearing partially, or even entirely, so that their proper position can only be determined from some slight difference in the surface of the parts which, in the normal state, would be darkly coloured. The difficulty of distinguishing the species is increased by the remarkable uniformity which exists in most of them, in the number and position of the spots on the scutellum; but we shall generally find that the underside of the body (though even here there is some tendency to variation) will present us with sufficient characters for this purpose, for it is seldom the case that the developement of the dark colouring matter is increased on both surfaces of the same individual.

Sp. 1. *P. latus*, N. S. (Pl. XIII. fig. 4.)

P. rotundato-ovatus, flavus, rubro-nebulosus, capite, maculisque thoracis et scutelli nigro-violaceis; abdomine rufo, immaculato, ano concolori; pectore flavescenti, antice pallide rufo; pedibus nigro-violaceis, femoribus basi testaceis; rostro* abdominis medium attingente. ♂, ♀.

Long. lin. 9—10.

Hab. in China.

In Mus. Brit.

Rounded-ovate, not very convex; above yellow, clouded with orange-red, thickly punctured. Head violet, shining, thickly and strongly punctured; eyes brown; ocelli red. Thorax thickly punctured, somewhat rugose, with the anterior angles, and two large spots on the disc, extending to the posterior margin, deep blue-violet. Scutellum thickly and finely punctured, slightly wrinkled transversely at the base; with a spot in each basal angle, a large, irregular, transverse patch in the centre of the base, and a transverse row of four spots, of which the two intermediate are by much the largest, across the disc, behind the middle, deep blue-violet; the surface around all the spots clouded with orange-red. Margins of elytra black. Abdomen beneath red, immaculate, thickly and finely punctured, and slightly pilose, with a strong central furrow at the base. Anal apparatus reddish. Breast thickly punctured, yellowish, variegated with blackish violet; the

* I have only noticed the length of the rostrum in the characters of those species in which it exceeds the usual limits.

antepectus pale red, with a violet-black spot at the base of the anterior legs. Thighs testaceous, their apices, with the tibiæ and tarsi, shining violet-black. Head beneath yellowish in the centre, with its margins violet. Antennæ black, the two basal joints with a violet tinge. Rostrum testaceous, with the two last joints black, the apex attaining the base of the fourth segment of the abdomen.

The Museum specimens of this beautiful species, which, from its form, may be considered as the link uniting this genus with *Tectocoris*, have the five spots in the centre of the base of the scutellum confluent, forming the large patch which is seen at this part; in the normal state they would be arranged exactly as in *P. Drurœi*. In this particular it agrees with *Tetyra Donovani*, Burm.,* (Nova Acta, &c. vol. xvi. p. 286, Tab. 41, fig. 1,) and also in the absence of the two subapical spots, and the length of the rostrum; but the difference in the form, and in the general colouring of the two insects, is too great to admit of the supposition of their identity.

Sp. 2. *P. interruptus*, Hope.

P. rotundato-ovatus, nigro-æneus; thorace margine postico, lineaque curva longitudinali utrinque, scutello linea submedia transversa interrupta, margineque apicali, coccineis; abdomine nigro-æneo, rubro-variegato, ano nigro; pectore toto, pedibusque nigris. ♂, ♀.

Long. lin. 7—9.

Hab. in Nepal.

In Mus. Brit.

Tectocoris interrupta, Hope, Cat. p. 14.

Scutellera int., Germ. Z. vol. i. p. 134; H. Sch. vol. v. p. 73, pl. 172, fig. 531.

Broadly ovate, rather flat; above brassy black, thickly and finely punctured. Eyes pale brown; ocelli red. Prothorax with the posterior margin, and a curved longitudinal line on each side, within the lateral angles, bright red. Scutellum with a narrow transverse line on the disc near the middle, interrupted in the centre, and the apical margin, bright red; [margins of elytra brassy black;] margins of abdomen black, variegated with bright red. Abdomen beneath black, shining, slightly brassy, the bases of the second, third, fourth and fifth segments, in the middle, and a marginal spot on the junction of each segment, red. Anal apparatus black, margined with red in the female. Breast brassy black, thickly and finely punctured. Antennæ, rostrum and legs black.

* This species approaches very closely to *P. Hardwickii*.

In a long series of this insect in the British Museum there are no indications of distinct spots; but it is probable that the anterior margin, and two spots on the disc of the prothorax, are black, and that the spots on the scutellum are arranged much as in *P. Hardwickii*, the interruption to the red band being evidently caused by the apex of the central basal spot of the scutellum, although it is certainly quite distinct from that species.

Sp. 3. *P. purpurascens*, Hope. (Pl. XIII. fig. 5.)

P. ovatus, violaceo nigroque variegatus; thorace maculis 4 parvis, scutelloque 5, coccineis; abdomine viridi-æneo, maculis 4 utrinque rubris, ano nigro-æneo; pectore toto, pedibusque nigro-violaceis. ♂, ♀.

Long lin. 8—9.

Hab. in Nepal.

In Mus. Brit.

Tectocoris purpurascens, Hope, Cat. p. 14.

Scutellera purp., Germ. Z. vol. i. p. 135.

Ovate; above variegated with violet and black, thickly and strongly punctured. Head nearly smooth, shining, slightly wrinkled, and punctured at the base and apex; eyes and ocelli brown. Thorax with a small red spot in the centre of the anterior margin, a corresponding one on the posterior margin, and a small streak of the same colour on each side towards the lateral angles. Scutellum with a small transverse streak on each side before the middle, a smaller longitudinal one towards the apex, and an oblique one on each side of this, on the lateral margins, bright red. Margins of elytra violet-black. Abdomen beneath slightly wrinkled, shining brassy green, the margins violet, with an irregular transverse red streak on each side on the second, third, fourth and fifth segments. Anal apparatus brassy black. Breast violet and green, shining, finely punctured, with a dull black patch on the medi- and post-pectus. Legs violet-black. Head beneath violet and green, shining, punctured. Antennæ and rostrum black.

The spots (indicated by the strong violet tints on various parts of the surface) are arranged, normally, exactly as in *P. Druræi*, but the species appears to be quite distinct.

Sp. 4. *P. Druræi*, Lin. (Pl. XIII. fig. 6.)

P. ovatus, luteo-fulvus, vel rufus; capite, maculis 2 thoracis, maculisque 13 scutelli, plus minusve confluentibus, nigris; elytris nigris; abdomine rufescenti-fulvo, basi, stigmatibus,

maculaque ante apicem, nigris; ano rufescenti; pectore (marginibus antero-lateralibus rufis exceptis), pedibus, antennisque nigris. ♂, ♀.

Long. lin. 8—9.

Hab. in Indiis Orient.

In Mus. Brit., &c.

Cimex Drurœi, Lin. Mant. Plant. 534; Drury, Ins. vol. i. p. 94, pl. 42, fig. 1; Fab. E. S. vol. iv. pp. 83, 13.

Tetyra Drurœi, Fab. S. R. pp. 132, 17.

Scutellera Dr., Germ. Z., vol. i. p. 135. (Burm. p. 396.)

(*Tectocoris Dr.*, Hope, Cat.) Stoll. Wanz. p. 114, fig. 267.

The normal condition of this species may be considered to exhibit the typical colouring of the genus; in it the spots on the scutellum are arranged,—five basal, of which the central one is somewhat triangular and rather short, the two intermediate smallest; two behind these, placed opposite the intermediate basal ones, a row of four across the disc, rather behind the middle, and two towards the apex. The seven spots at the base are frequently confluent, forming a large basal patch, with three large notches in its posterior margin (as in the variety figured by Drury); the row of spots across the disc are also often united to form a transverse band. The narrow basal segment of the abdomen, and generally the second segment also, are violet-black; the stigmata of the other segments are surrounded by spots of the same colour, which generally occupy the entire lateral margins of the segments, and thus form a black border to the abdomen; the terminal segment, except the posterior and lateral margins, is black.

In a specimen of this insect, in the Museum of the East India Company, the usual black spots on the thorax and scutellum are represented by whitish guttæ, whilst the black markings of the abdomen occupy more of the surface than usual.

Sp. 5. *P. obsoletus*, N. S.

P. ovatus, coccineus opacus, pallide violaceo-maculatus; thorace marginibus lateralibus et antico nitidis; elytris coccineis; abdomine coccineo, segmento primo, stigmatibus, maculaque magna segmenti ultimi, nigris; ano rubro; pectore (marginibus antero-lateralibus exceptis), pedibusque nigris, femoribus basi fuscescentibus. ♂.

Long. lin. 9.

Hab. Hong Kong.

In Mus. Brit.

Ovate, above bright velvety red, thickly punctured. Head and eyes black; ocelli reddish. Thorax with the anterior and lateral margins smooth, shining, rather coarsely and irregularly punctured; two indistinct yellowish patches within the anterior angles, and faint indications of two elongated violet spots on the disc. Scutellum slightly wrinkled transversely at the base, and with indications of eleven violet spots, placed five at the base, two behind these, and four in a transverse row across the middle; the apical portion orange, finely reticulated with red. Margins of elytra bright red, thickly and coarsely punctured. Abdomen red, shining, with a few scattered punctures, and a faint longitudinal furrow at the base; the basal segment pitchy black, a small spot round each of the stigmata, and a large crescent-shaped one on the terminal segment, black. Anal apparatus red. Breast violet-black, shining, finely and sparingly punctured, a dull space on each side of the medi- and post-pectus; the antero-lateral margins and the lateral angles red. Thighs brownish, slightly tinted with brassy, their apices, the tibiæ and tarsi, brassy black. Head beneath shining violet, punctured, yellowish at the base. Antennæ black, the three basal joints tinted with violet and brassy, the two apical covered with short greyish hairs. Rostrum pitchy.

This insect was recently sent from Hong Kong by John C. Bowring, Esq.; it is very nearly allied to the preceding, the spots being arranged in exactly the same manner; but the two subapical ones are wanting, whilst the red colour of the margins of the elytra, the colour of the legs, the peculiar texture of the margins of the thorax, and the clothing of the two last joints of the antennæ, seem to mark it as a distinct species.

Sp. 6. *P. pulcher*, White, MS. (Pl. XIII. fig. 7.)

P. ovatus, purpureus, thorace antice, marginibus lateralibus, lineaque centrali coccineis; scutello basi, fasciaque lata media violaceo-tinctis; abdomine coccineo, stigmatibus nigris; ano rufo; pectore (marginibus antero-lateralibus exceptis) pedibusque nigro-purpureis. ♂.

Long. lin. 9.

Hab. in Malabar.

In Mus. Brit.

Ovate, deep velvety purple, thickly and finely punctured. Head shining, strongly punctured, blackish at the base, and along the margins of the lobes; eyes brownish; ocelli reddish. Thorax broadly margined with red laterally and anteriorly, and with a narrow, central, longitudinal line of the same colour on the disc.

Scutellum deep purple, with the base (irregularly), a transverse band across the disc, before the middle, a narrow central line uniting these, and a small spot on each side of the latter, shining violet. The margins of the elytra brownish purple. Abdomen with a strong furrow at the base, bright red, with a violet reflection, smooth, shining, very finely and moderately punctured; a black spot round each of the stigmata, and a faint band of the same colour across the terminal segment. Anal plate red. Breast purple, variegated with violet and greenish tints, shining, thickly and finely punctured, the antero-lateral margins and lateral angles red. Thighs brassy purple; tibiæ shining violet; tarsi black. Head beneath violet and green, shining, strongly punctured; orange at the base. Antennæ (mutilated) shining violet. Rostrum brassy black, basal joint pale pinkish violet.

The spots in this beautiful species appear to be arranged as in *P. Drurœi*, except that the two subapical ones are wanting. The others can easily be traced in the violet tints of the base, and the broad band across the middle of the scutellum.

Sp. 7. *P. Childreni*, White.

P. ovatus, luteo-fulvus; capite, thorace antice maculisque 4 posticis, scutelloque maculis 11, nigris; abdomine, pectoreque toto, nigro-purpureis, illo lineis 4 transversis utrinque, fulvis; ano nigro; pedibus nigro-purpureis. ♂, ♀.

Long. lin. 9.

Hab. in Nepal.

In Mus. Brit., &c.

Pœcilochroma Childreni, White, Ent. Trans. vol. iii. p. 84, pl. 7, fig. 1.

The spots on the scutellum are placed,—three basal, of which the central one is large, triangular, and produced on each side at the base, in such a manner that it appears as though in the normal state there would be an additional spot on each side, as in *P. Drurœi;* two behind these, a row of four across the disc, rather behind the middle, and two subapical. It is rather singular, that all the three specimens with which I am acquainted have (as noticed by Mr. White, l. c. sup.) a strong impression across the disc of the scutellum, in front of the transverse row of spots, in two instances, certainly, *increased* since the death of the insect, but in the third apparently in the same condition as during its life. This character, if it be one, exists in no other species.

I have never seen any specimens with the spots confluent, but if such should occur, they would be easily distinguishable from *P.*

Drurœi by the broad black anterior margin of the prothorax, and the black anal plates; from the following species, *P. Hardwickii*, by the margins of *all* the segments of the abdomen being violet-black; and from both, by the presence of four spots on the disc of the prothorax, and by the entire breast being violet-black. It is probable that, in the normal condition, the disc of the abdomen may be yellow or orange, margined with black, as in *P. Drurœi*, for in one of the specimens in the British Museum there exists, in addition to the transverse lines on each side, a narrow longitudinal line in the centre, which crosses two or three of the segments.

Sp. 8. *P. Hardwickii*, Hope.* (Pl. XIII. fig. 8.)

P. ovatus, luteo-fulvus vel sanguineus; thorace antice maculisque 2 nigris; scutello nigro-maculato vel variegato; abdomine rufo, basi, segmentis marginibus lateralibus, penultimo et terminali exceptis, segmento ultimo anoque, nigro-violaceis; pectore (marginibus antero-lateralibus exceptis) pedibusque nigro-violaceis. ♂, ♀.

Long. lin. 8—10.

Hab. in India.

In Mus. Brit., &c.

Tectocoris Hardwickii, et *affinis*, Hope, Cat. p. 13.

Pachycoris Nepalensis, H. Sch., Wanz. Bd. 4, p. 1, Tab. 109, fig. 339.

Scutellera Hardwickii, Germ. Z., vol. i. p. 135.

Ovate, convex, above yellowish-orange or red, opaque, rather thickly and finely punctured. Head black, thickly and strongly punctured; eyes and ocelli brownish. Thorax with the anterior portion, and two large spots on the disc, black. Scutellum slightly wrinkled transversely at the base; in the normal state with eleven black spots, placed, three at the base, of which the central one is large, elongated-triangular, a small round one on each side of the apex of this, a transverse row of four across the disc, behind the middle, the two intermediate of which are the largest, and two smaller towards the apex. These spots are generally either more or less confluent, or partially obliterated, forming numerous varieties, as noted below. Margins of the elytra pitchy black. Abdomen beneath orange-red, very faintly wrinkled, the basal segment entirely, the second, except the middle, the third and fourth on the lateral margins, the terminal segment, except its lateral margins,

* The insect described by Burmeister (Nova Acta, &c., vol. xvi. p. 286), under the name of *Tetyra Donovani*, very closely resembles this species, with which it may perhaps be identical; in this case Burmeister's name must supplant Hope's.

(and, in the male, its base,) and the anal apparatus, violet-black; the penultimate segment is entirely red. Breast black, tinted with violet, finely punctured; the lateral angles of the antepectus, and part of the antero-lateral margins, red. Legs violet-black. Antennæ and rostrum black.

This is one of the most variable species of this genus with which we are at present acquainted. Mr. Hope has described, as distinct species, the two following varieties, viz.

1. *Tect. Hardwickii*, Hope.

Pachycoris Nepalensis, H. Sch.; *Scutellera Hardwickii*, Germ.

In this the spots have become confluent, so that the general colour of the upper surface of the insect is black; the thorax is nearly covered by the two spots on the disc, which extend forwards to the black anterior margin, and posteriorly to the hinder margin; the five spots at the base of the scutellum are united, forming a large waved band across the base, from the centre of which the apex of the triangular basal spot projects, while the two intermediate spots of the transverse row are joined to one another, and to the two subapical ones, forming a large rounded lobate patch.

Between this and the normal state, and between the latter and the following variety, a good many intermediate forms exist.

2. *Tect. affinis*, Hope.

In this the two subbasal and the two subapical spots are wanting, all the other characters existing as in the normal condition of the species, although we sometimes find the two spots on the disc of the thorax exceedingly indistinct. The species however is easily distinguished, throughout all its varieties, from those most nearly allied to it, by the uniform red colour of the fifth segment of the abdomen.

Sp. 9. *P. dives*, Guérin.

P. rufo-fulvus; capite, thorace margine antico, maculis thoracis et scutelli, elytrorumque marginibus nigris; abdomine rufo, sulco longitudinali indistincto, stigmatibus nigris; rostro fere abdominis apicem attingente. ♂.

Long. lin. 7½.

Hab. in Java.

In Mus. Brit.

Scutellera dives, Guérin, Ic. pl. 55, fig. 1.

Somewhat elongate-ovate, above orange, thickly and finely punctured. Head brassy-black, shining, punctured; eyes brown-

ish; ocelli reddish. Thorax with the anterior margin, a spot on each lateral angle, a submarginal line on each side, uniting these with the anterior margin, and two large spots on the disc, violet or brassy-black. Scutellum with thirteen violet-black spots, placed as in *P. Druræi*. Margins of the elytra violet-black. Beneath thickly and finely punctured. Abdomen with a slight central furrow, red, shining, with a slight violet tint; a violet-black spot on each of the stigmata. Anal plate red. Breast violet, shining, pale in the centre and at the insertion of the legs; the antero-lateral margins red. Legs brassy-violet, with the base of the thighs brownish testaceous. Head beneath violet. Rostrum reaching nearly to the apex of the abdomen, violet-black, with the edges of the basal joint, and the articulations of all the joints, testaceous. Antennæ violet-black, with the base of the first joint testaceous.

Guérin, in the letter-press to his "Iconographie du Règne Animal," states this to be only a variety of *P. Druræi;* his figure, however, differs sufficiently from that species to show at once that they are decidedly distinct; and the characters drawn from the extraordinary length of the rostrum, and the colouring of the underside, place them at a still greater distance.

Sp. 10. *P. longirostris*, N.S. (Pl. XIII. fig. 9.)

P. luteo-fulvus, capite, maculis thoracis et scutelli, elytrorumque marginibus, nigris; abdomine luteo-fulvo, sulco longitudinali centrali distincto, stigmatibus nigris; rostro fere abdominis apicem attingente. ♀.

Long. lin. 9.

Hab. in Java.

In Mus. Brit.

Ovate, somewhat elongated; above orange-yellow, very thickly and finely punctured. Head black, strongly punctured; eyes brown; ocelli reddish. Thorax very narrowly edged with black anteriorly, and with a black spot within each anterior angle. Scutellum with seven black spots, placed, three at the base, two intermediate, and a very small one on each side, near the middle of the lateral margins. Beneath very thickly and finely punctured. Abdomen with a strong central furrow, orange-yellow, shining, with a violet-black spot on each of the stigmata. Anal apparatus yellow. Breast violet, shining; the centre, the antero-lateral margins, and some transverse lines on the margins of the segments, yellow. Legs shining violet; thighs at the base, and

coxæ, brownish testaceous. Head beneath violet, strongly punctured, yellow at the base; the antenniferous tubercles yellowish. Rostrum very long, reaching nearly to the apex of the abdomen, brassy green, shining; the edges of the basal joint yellow. Antennæ (mutilated) violet-black.

The only specimen of this insect in the British Museum is evidently deficient in spots; the two spots in the anterior angles of the prothorax being the remains of a transverse band on that part; the spots on the disc of the thorax, and most probably six spots of the scutellum, being wanting. It is very nearly allied to *P. dives*, but appears to be distinct; it may possibly, however, turn out to be the female of that species.

XXVIII. *Description of some Species of* Geometridæ *from South America, forming a new Genus.* *By* Edward Doubleday, Esq. F.L.S., F.Z.S., &c.

[Read May 1st, 1848.]

The beautiful insects forming the genus I am about to characterize are natives of the mountainous regions of the tropical portions of South America. The only specimens I have seen of the species here described were brought home by Mr. Dyson from Venezuela, and by Mr. Bridges from Bolivia. The former traveller found the three first species in the lofty mountains of Caraccas, the latter collected the fourth and fifth species in the country of the Yurucam Indians, in the Andes of Bolivia. I have also seen one species from the mountainous parts of Brazil, and much regret not being able to lay before the Society a description of it. It belongs to the third section. Of the affinities of the genus I can say nothing. We know too little of the *Geometridæ* to venture upon that subject, yet perhaps I might safely suggest an alliance to the genera *Odezia*, *Torula* and *Psodos*, all more or less mountain genera. The analogy in form to some of the *Erycinidæ* cannot be overlooked.

Like the genera *Odezia*, *Torula* and *Psodos*, the *Erateinæ* are diurnal insects.

The first segment of the abdomen offers the same remarkable cavity which, on a former occasion, I mentioned to this Society as occurring in some of the *Glaucopidæ*, considering it to be analogous

to the drum of the *Cicadæ*. I regret exceedingly not being able to make out more satisfactorily both this peculiarity, and the structure of certain anal appendages, which seem to exist in both sexes of some at least of the species. In *Erateina Zoraida* those of the male consist of two large shell-like valves, lined internally with hair, and furnished above with a tuft of long hairs on each side; they appear to be capable of being entirely retracted within the abdomen. The structure of the scales and hairs, within the fold of the inner margin of the posterior wings, is very remarkable. The scales are oval, much like those of the peculiar spots on the wings of some species of *Colias* and *Callidryas*, very faintly striate. The hairs are jointed, composed of striated cylinders, much resembling the spines of an *Echinus*, easily detached one from the other, and then appearing like small cylindrical scales. On this subject I shall have more to say at a future time, as also on the characters of the abdomen.

Genus Erateina.

Head small, round, the forehead clothed with appressed scales, the vertex between the antennæ with a tuft of elongate scales, not closely appressed. *Eyes* rather small, round, not remarkably prominent. *Maxillæ* about equal in length to the whole body. *Labial palpi* small, much curved, ascending, parallel, scaly; the scales in front at the base elongate, more or less erect; behind and towards the apex in front short, appressed; first joint stout, sub-cylindric, much curved, the apex obliquely truncate; second joint of about equal length, slenderer, less curved, sub-cylindric, smaller towards the apex; third joint one-third the length of the second, obovate, and slightly pointed. *Antennæ* not quite so long as the body, simple, the joints short, scaly on the back, thickly set at the sides and within with very delicate, short, erect hairs. Thorax rather small, oval, the prothorax exceedingly short. *Anterior wings* trigonate, the apex very slightly rounded, the margins but little rounded, the anterior one-half longer than the inner margin, this latter rather shorter than the outer margin. Costal nervure extending beyond the middle of the anterior margin. Sub-costal nervure throwing off its first nervule before the end of the cell, then bending downwards, and again rising to unite for a short distance with its first nervule, thus forming a small elongate cellule. Second, third and fourth sub-costal nervules united at their origin, the second separating itself at a point nearer to their common origin than the point where the third and fourth separate from each other; the fourth terminating at the apex; the fifth, on

the outer margin, considerably below the apex. Cell less than half the length of the wing. Upper disco-cellular nervule wanting; the first discoidal nervule, arising from the sub-costal nervure, near the end of the cellule formed by its junction with the first sub-costal nervule. Middle disco-cellular nervule arising before the origin of the first discoidal nervule, straight, shorter than the lower disco-cellular, which is first directed immediately across the wing, then outwards to the third median nervule, which makes a slight angle at the point of union. First median nervule thrown off at a point about half as distant from the end of the cell as from the base of the wing, slightly curved downwards, as is the second. Third median nervule slight, curved upwards. *Posterior wings* elongate, caudate, dentate externally; or somewhat quadrate, caudate or rounded; the inner margin in the males (of some species at least) folded back upon the under surface of the wing, forming a semi-oval lobe, the inside of which is lined with scales or jointed hairs of a very singular structure. Precostal nervure extending beyond the margin of the wing, in the form of a short, stout bristle, simple in the males, divided at the termination in the females, not received in either sex into a socket on the under surface of the upper wings. Costal nervure separating from the sub-costal at the base of the wing, then uniting to it for some distance, so as to form a small triangular cellule, again separating from it, and terminating beyond the middle of the inner margin. First sub-costal nervule terminating at the outer angle of the wing. Discoidal nervure thrown off from the sub-costal nervure at right angles to it, a little above its division into its two nervules, then bent at a right angle, and directed towards the outer margin of the wing, slightly bent where the short lower disco-cellular is united to it. Third median nervule slightly bent at the point where it receives the lower disco-cellular. *Anterior feet*, with the femur, nearly twice as long as the tibia, slightly dilated in the middle. Tibia short, armed within, about the middle, with a stout slightly curved spine, extending to the apex or nearly so, and covered in the males (of some species at least) by a tuft of long curled hairs. Tarsi with all the joints sub-cylindric, spiny laterally and below, except the fifth, which is bare below; the first joint longer than the rest combined, second about one-third the length of the first, third about half the length of the second, fourth and fifth nearly equal, rather more than two-thirds the length of the third. Claws curved, serrate internally about the middle, the base covered with a tuft of stiff hairs. Paronychia sub-ovate, fringed with long hairs. Pulvillus broad, not so long as the claw. *Middle and posterior*

legs with the femora rather shorter than the tibiæ, the latter slender, sub-cylindric, rather stouter at the apex than at the base, armed within, beyond the middle, with two moderately stout moveable spines, and two similar ones at the apex. Tarsi longer than the tibiæ, similar in their structure to those of the anterior pair. Abdomen short, slender, curved, the base with a cavity on each side, within which may be seen a drum-like membrane. Last segment, in the males at least, furnished with two broad valves, lined inside with hair, and surmounted by a tuft of long hairs on each side.

The genus is divisible into three sections founded on the characters of the posterior wings. In the first section they are elongate, caudate, externally dentate, the tail being formed by a prolongation of the first and second median nervules, reminding us of the hind wings of *Diorhina Rhetus* and its allies.

This section seems to be confined to the more northern parts of South America, as I have only seen the specimens collected by Mr. Dyson.

The second section has the posterior wings subquadrate, the second and third median nervules being prolonged so as to give an angular character to the outer margin. This structure reminds us of the genus *Ancyluris*.

The third section has the posterior wings obovate, and in some respects reminds us of *Eurygona Ouranus*.

The generic details, which will be given conjointly with some figures illustrative of the peculiar scales and hairs of the posterior wings, are from a specimen of *Erateina Zoraida*, the only species I have had an opportunity of dissecting. I may here express my hope that Lepidopterologists will for the future be more careful to preserve the legs of their specimens. In drawing up the generic characters given above I have had considerable trouble owing to want of care in this respect on the part of the collectors of the specimens.

Sect. 1.

Sp. 1. *Er. Zoraida.*

Er. Alis omnibus supra cervino-fuscis, anticis linea media flexuosa, transversa, alba, posticis fascia lata margineque externo cinnabarinis.

Exp. alar. 1 unc. 7 lin. vel 40 mill.

Hab. Venezuela. (Tab. XII. fig. 1, 1 *a*, 2.)

Head black; the orbits of the eyes white, the palpi striped with white; antennæ black; thorax fawn-coloured. Anterior and

posterior wings above of a fuscous brown, more or less tinged with fawn colour, especially towards the base of the wings, the colour varying with the direction of the light. The anterior wings are crossed about the middle by a flexuous white band, commencing below the subcostal nervure, and terminating slightly before the anal angle. The posterior wings are crossed by a submarginal band of a dull cinnabar colour, narrow, almost pointed at its commencement near the outer angle, broad at its termination on the inner margin above the anal angle; sending off two short branches to the outer margin. Outer margin cinnabar-coloured. The under surface of the anterior wings has the base of a dull cinnabar colour, striped longitudinally with white, the cell is crossed by a slightly silvery white band, and the discocellular nervule is marked by a short band of the same colour; the band of the upper surface is represented by a similiar band, extending however to the costa, and to the inner margin, of a paler colour at both its origin and termination, than on the disc; and bordered externally with black. Between this band and the outer margin is a pale ash-coloured line bordered externally with black, the inner margin towards the base is broadly silvery ash-coloured. Posterior wings of the male having the inner margin reflexed at the base, forming a semioval fold, partially covering the disc of the wing; this fold externally is of a cinnabar brown, delicately edged with silvery white, marked near the base with silvery spots, and within its margin by a delicate silvery white line; internally it is lined with silky hairs. Immediately beyond this fold the wing is of a dull cinnabar colour; marked irregularly with white, beyond which are two transverse bands, the first of an ashy white, the second of a cinnabar colour, beyond these bands the wings are of a cinnabar brown clouded, with the outer margin marked with dull white spots, and the outer angle with a dash of the same colour. The female differs from the male in wanting the fold, and having the base streaked alternately with cinnabar and whitish. Legs ash-coloured. Abdomen fawn-coloured, ringed with white.

Sp. 2. *Er. Ianthe.*

Er. Alis anticis cervinis, costæ basi cinnabarina, posticis basi subcinnabarinis, tunc rufo-aurantiacis, fascia submarginali externe dentata nigra.

Exp. alar. 1 unc. 7 lin. vel 40 mill.

Hab. Venezuela. (Tab. XII. fig. 3, 4.)

Head black, orbits of the eyes white. Palpi striped with white. Antennæ black. Thorax greyish fawn-coloured. Anterior wings

above fawn-coloured, the base of the costa and the median nervule cinnabar-coloured. Posterior wings cinnabar-coloured at the base, the inner margin and the base furnished with some long fawn-coloured hairs, the middle crossed by a broad band of a reddish orange, narrowed near the costa; beyond this is a broad, black, submarginal band, reaching from the outer to the inner angle, sending out two short branches to the outer margin, and a broad one to the tail; the outer margin cinnabar-coloured, inner margin marked with a round black dot at the anal angle. The under surface of the anterior wings is white at the base, marked with three or four cinnabar-coloured vittæ. The costa is yellowish; the disc is crossed by a cinnabar-coloured band, becoming narrower towards the inner margin, marked at the end of the cell with a short white vitta; this band is followed by a white one, extending from the costa to the anal angle; beyond this band the wings are of a cinnabar brown, freckled with ashy white, and crossed by a band of the same colour. The posterior wings have the under surface white from the base beyond the middle, more or less marked with narrow cinnabar-coloured lines, then follows a rufous orange band, bordered externally near the outer angle with greyish ash colour, and beyond this with black; the remainder of the wings is of a deep cinnabar hue, the outer margin with three white lunules, separated by two black dots; the tip and inner side of the tail each with a white dot, separated by a black one, another white spot at the termination of the orange band, and above this a black one. Legs greyish. Abdomen ash-coloured, ringed with white.

This species is easily known from the preceding by the want of the flexuous white band of the anterior, and the cinnabar-coloured base of the posterior wing. The specimen figured Tab. XII. fig. 4, I have considered only a variety of this species, but it possibly is distinct from it. Above it has two slight transverse reddish bands, beyond the middle of the anterior wings, which approximate as they approach the anal angle, less red on the median nervure, and a slight tinge of red on the sub-median; the posterior wings have a black dash on the anterior margin, and more black at the anal angle than in the true *Er. Ianthe*. Below, the base of both wings is more distinctly marked with cinnabar-brown vittæ. If distinct, I propose for it the name of *Er. Iphis*.

Sp. 3. *Er. Julia*.

Er. Alis anticis fuscis, basi cervinis, fascia transversa media,

alba, hyalina ; posticis luteis, basi cervinis, fascia lata externe dentata, submarginali nigra.

Exp. alar. 1 unc. 9 lin. vel 45 millim.

Hab. Venezuela. (Tab. XII. fig. 5, 5*a*.)

Head white, the forehead with two black lines uniting on the vertex. Palpi white, lined with black. Antennæ black externally, white internally. Thorax greyish ash or fawn-coloured, with four black longitudinal lines, the prothorax white. Anterior wings fuscous above, the base fawn-coloured, the disc crossed by a semi-transparent whitish band, commencing on the costa beyond the cell, and terminating almost in a point a little above the anal angle. Posterior wings above bright luteous, the base fawn-coloured, the outer margin with a rather broad black band, commencing on the costa, occupying the outer angle, and terminating at the anal angle, sending off a branch which terminates before the end of the tail, and having two short teeth extending to the outer margin. The inner margin has two dark spots about the middle ; the outer margin is bright luteous, except where touched by the black of the submarginal band. The anterior wings have the lower surface yellowish white at the base, with five longitudinal cinnabar-coloured vittæ, the inner margin pale fuscous, the rest of the wing of a cinnabar hue crossed by two bands; the first the white sub-diaphanous band, common to both surfaces, the second nearer to the outer margin, narrower, pale ash colour. Cilia fuscous. The posterior wings have the lower surface streaked at the base with yellowish white, the middle crossed by a whitish band, tinged with yellow, bordered with luteous yellow beyond the second sub-costal nervule, bent almost at a right angle where it crosses the first median nervule, terminating on the inner margin above a rounded black dot ; near the outer angle is an abbreviated, slender, pale fascia, terminating before reaching the discoidal nervule, beyond which are two or three small black clouds ; the outer margin is marked with two black spots, and there are two similar spots, one at the anal angle, one on the inner side of the tail. Legs greyish. Abdomen ringed alternately with pale greyish and fawn-coloured.

I have named this beautiful insect after the wife of one of the most amiable and talented of French Entomologists. Those who have read the *Lettres à Julie* will agree with me in the opinion that there does not exist a better elementary work on Entomology, and certainly none in which science is so delightfully intermingled with love and poetry; and those who, like myself, have been ho-

noured by the friendship of their author will know how to appreciate the candour, the kindness, and the unaffected simplicity so conspicuous in his writings.

Sect. 2.

Sp. 4. *Er. Neæra.*

Er. Alis omnibus supra nigris, basi cervino-tinctis, anticis vitta basali alba, fascia pone medium transversa, abbreviata diaphana, lineis duabus submarginalibus ochraceis; posticis vitta media, maculisque marginalibus albis.

Exp. alar. 1 unc. 6 lin. vel 38 millim.

Hab. Bolivia. (Tab. XII. fig. 6.)

Head black, orbits of the eyes white, antennæ black. Thorax fawn-coloured. Anterior wings above fuscous black, the base fawn-coloured, with a white dash below the median nervure, the disc with an abbreviated and transparent fascia; beyond which, near the costa, is a comma-shaped ochreous dot, from which proceed two slender lines of the same colour, reaching about to the first median nervule. Posterior wings above with a rather broad white vitta, occupying the disc, and four white spots on the outer margin. The under surface of both the anterior and posterior wings is cinnabar-coloured, the base streaked with white, the two ochreous lines of the anterior wings replaced by a band of that colour, divided by an ash-coloured line. The posterior wings have several discoidal, lunate white spots, and towards the margin a flexuous, ochre-coloured band, divided by a grey line. Legs ash-coloured. Abdomen fawn-coloured, ringed with white.

Sect. 3.

Sp. 5. *Er. Cynthia.*

Er. Alis omnibus supra fuscis, anticis macula disci diaphana; posticis disco maculisque marginalibus albis.

Exp. alar. 1 unc. 1 lin. vel 26 millim.

Hab. Bolivia. (Tab. XII. fig. 7, 7*a*.)

Head black, orbits of the eyes white, antennæ black. Thorax black. Anterior wings above fuscous black, with a large diaphanous spot beyond the cell, divided by the discoidal and third median nervules. Posterior wings fuscous black, the whole disc occupied by a large white patch; the cilia black, spotted with white. The lower surface of the anterior wings is varied with cinnabar and ochre-colour, the former colour predominating on

the costa and outer margin. The posterior wings of the males have the inner margin reflexed, forming a semi-oval lobe, the exterior surface of which is of a silvery white, the wings beyond this lobe silvery white, with a small cinnabar spot opposite the middle of the fold; the outer margin broadly cinnabar-coloured, clouded with yellowish, the cilia spotted with white. Legs fuscous, the tibiæ and tarsi ringed with white. Abdomen black, with white rings.

EXPLANATION OF PLATE XII.

Fig. 1. *Erateina Zoraida*, ♂.
1*a*. ,, ,, ,, under surface.
2. *Erateina Zoraida*, ♀.
3. *Erateina Ianthe*.
4. *Erateina Ianthe*, Var.? (*Er. Iphis*.)
5. *Erateina Julia*.
5*a*. ,, ,, under surface.
6. *Erateina Neæra*. The base of the anterior wings is coloured rather too dark. The specimen has been considerably rubbed by the captor, but appears to have had rather more of the fawn colour than the artist has represented.
7. *Erateina Cynthia*, ♂.
7*a*. ,, ,, ,, under surface.

The generic details will be given on a future plate, with the figures of the scales and hair of the posterior wings, of which I hope soon to have a notice before the Society.

XXIX. *Description of some Hermaphrodite British* Lepidoptera, *with Figures of the Insects.* *By* William Wing, Esq. (Pl. XIV. fig. 2—9.)

[Read July 3, 1848.]

Many instances have been recorded of insects that have exhibited the characters of both sexes, as well in the colours and markings on the wings and body as in the form of different parts; and as a few specimens of these among the *Lepidoptera* have come to my knowledge, I have thought it desirable that accurate figures and descriptions of these specimens should also be published. I have therefore drawn up short notices of their principal characters, which I now beg to lay before the Society, presenting therewith a plate of delineations of the insect.

Colias Edusa (Pl. XIV. fig. 2). In this insect the left side is that of the male, and the right side, as indicated by the size and form of the wings, is female, further distinguished by the marginal yellow spots in the anterior wing of that side.

This specimen was captured at Riddlesdown, near Croydon, Surrey, August, 1847, and is now in the possession of S. Stevens, Esq.

Anthocharis Cardamines (Pl. XIV. fig. 3). In this species the characters of the two sexes are very conspicuous. The bright orange spot on the left anterior wing strongly contrasts with the clear colour of the right wing, which also has the black spot the largest, as is always the case in the female. There is also a striking difference in the relative sizes of the wings of the two sides, the female being the largest.

This specimen was taken near London, and is now in the possession of H. Doubleday, Esq., to whom I am indebted for the loan of it, and also of the following specimen.

Smerinthus Populi (Pl. XIV. fig. 4). In this instance the left antenna, wings and side of the body are most distinctly masculine, while those of the right are of the other sex. There is a marked longitudinal line of distinction between the two sides on the dorsal surface of the abdomen; and the colours and markings on the wings are darker and more distinct on the left side, and are those

peculiar to the male, while those on the wings of the right side are as characteristic of the female; the antenna on the left side is broad and densely pectinated as in the male, while that on the right is narrow and setaceous. The abdomen of the male insect of this species, as is well known, is always smaller in diameter than in the female, and densely tufted at the anus, and this is precisely the case in that half of the specimen in question which exhibits the characters of the former sex.

This specimen was taken at Witham, in Essex.

Diaphora Mendica (Pl. XIV. fig. 5). This specimen has the form of the wings, body and antennæ of the male, but the colour and markings of the female. The male of this species, as entomologists are aware, is dark ash colour, with black spots, while the female is cream colour, with similar markings, like the specimen figured.

Taken by Mr. Nicholas Cooke, near Dublin, June, 1842.

Orgyia Antiqua (Pl. XIV. fig. 6) is an imperfectly developed hermaphrodite, which had not fully expanded the upper wing on the right side, which in this case is that of the male, as shown by the large pectinated antenna and the fully developed posterior wing; the antennæ on the left side being setaceous as in the female, and the wings also rudimentary as in that sex.

It was reared by the late Mr. Henry Longley, from the larva, and presented since his death to the British Museum.

Acronycta Aceris (Pl. XIV. fig. 7). The left side, together with the whole of the body, is distinctly of the form and colour of the male of this species, while the right wings have the colour and fainter markings of the female.

It was reared from a pupa, and kindly presented to me by E. Doubleday, Esq.

Biston Prodromaria (Pl. XIV. fig. 8). The wings and whole of the body appears to have the characters of the male, but the right antenna is that of the female; the difference of wings in the sexes of this species is scarcely to be perceived.

It was taken in Dunham Park, Cheshire, in April, 1840, by R. Edleston, Esq., to whose kindness I am indebted for the opportunity of figuring it, and also of the following insect, and *Diaphora Mendica*.

Nyssia Zonaria (Pl. XIV. fig. 9). The characters are entirely those of the female, with the exception of the antenna on the left side male; the rudiments of the wings are longer on the left side. It was taken by Mr. B. Cooke, at New Brighton, March, 1838.

XXX. *Extracts from a Paper by Zeller published in the Linnæa Entomologica, vol. 3, on the "Leaf-mining* Tineæ, *with Eye-Caps" (Augendeckeln), with Remarks by* H. T. Stainton, Esq.

[Read July 3, 1848.]

My object being to draw attention to the different species and their habits, in order to lead to the discovery in this country of those which are still unknown to us, I shall merely quote the distinguishing characters of those species not previously described as indigenous. Zeller's paper includes the following genera: *Lyonetia, Phyllocnistis, Cemiostoma, Opostega, Bucculatrix, Nepticula, Trifurcula,* and *Tischeria,* corresponding to portions of our genera *Argyromiges, Microsetia,* and *Apheloscia.*

In his genus *Lyonetia* he has four species, two of which only are known to us.

"Sp. 1. *Clerckella,* Linn." Linn. Ent. vol. 3, p. 252. Vol. 2, pl. 2, f. 27—30.

This is the species described by me under this name in the Zoologist, p. 2159, and identical with the *autumnella* of Curtis, and the *nivella* and *semiaurella* of Stephens, which latter is the variety *æreella* of Treitschke.

"This species is very widely dispersed, and probably abundant in many places, but not sufficiently observed.

"The first specimens in the year I beat from birch in the first days of May, but scarce and only the varieties. After that, *Clerckella* flies from June through the whole of the summer and autumn. I beat it abundantly from the wild apple and pear; but mostly from birch bushes.

"The variety *æreella,* not scarce in several places in Tuscany in March, April and June (Mann)."

It appears thus, from Zeller and Mann's observations, that the variety *æreella* (our *semiaurella*) occurs in the early spring in March, April and May, but not the typical *Clerckella;* the same

thing has been observed in this country, and the specimens taken in March and April have, I believe, always the appearance of hybernated specimens. Several specimens of *semiaurella* were beat out of fir-trees at West Wickham, by Messrs. Douglas and Bedell at the end of March this year (1848).

" Sp. 2. *Prunifoliella*, Hübn." Linn. Ent. vol. 3, p. 259.

This is the *Clerckella* of the Linnean Cabinet.

" Certainly distinct from the preceding; larger, and distinguished by the oblique brown dorsal streak, curved posteriorly, on the anterior wings, and the entirely differently-coloured apex of the wing."

" Scarce, but widely dispersed; I took one on the 7th of August in a garden at Berlin, one near Glogau on the 7th July, on a fence, and one on the 29th July, on the Reinerz Seefeldern, (salt marshes?) where, as far as I know, no Prunus grows."

" Sp. 3. *Padifoliella*, Hübn." Linn. Ent. vol. 3, p. 261.

This species is described by me in the "Zoologist," p. 2160, under this name; it is taken in the autumn at Whittlebury. It appears much rarer on the continent; Zeller had *only seen four* specimens, and states that he was greatly in doubt whether it was not a variety of *prunifoliella*, in the same way as *cæreella*, Tr. is of *Clerckella*.

" Mann took several specimens in June, 1835, near Reichstadt in Bohemia, on Prunus padus; in the Prater, near Vienna, in July, on elms." " Bouché bred it in Berlin from birch leaves."

" Sp. 4. *Pulverulentella*, F. v. R." Linn. Ent. vol. 3, p. 263.

" This species, of the size and form of the preceding, only with the anterior wings rather broader, is distinguished by the want of distinct markings, particularly by the pale apex of the wing."

" The specimen in Fischer's Collection was from Bohemia; that now before me, from Mann's, was taken alone on an ash at Tivoli, near Vienna, in June, 1842. Both specimens are males."

In Zeller's genus *Phyllocnistis* he has only two species, both probably occurring in this country.

" Sp. 1. *Suffusella*, Z." Linn. Ent. vol. 3, p. 266.
Vol. 2, pl. 2, f. 31—34.

" Rather larger than *saligna*; differs from it by wanting the

brown double line which springs from the base of the anterior wings in the latter."

"This species occurs near Vienna (F. R.); in Italy (near Pratovecchio in Tuscany, at the end of March, common—*Mann*), where its food, without doubt, is the Lombardy poplar; and near Berlin, Frankfort and Glogau (very abundant), and Warmbrunn in Silesia. It flies, after having passed the winter in the pupa state, not altogether scarce, in May, then abundant at the end of June, and through the following months to the end of September, probably even in October. It frequents poplar woods, from the boughs of which they are beaten morning and evening, and very easily caught. They sit on leaves, stems of trees, and fences."

"Sp. 2. *Saligna*, Z." Linn. Ent. vol. 3, p. 270.

This species is described by me in the "Zoologist," p. 2158, as the *cerasifoliella* of Hübner, and I there give as synonymes Stephens' *unipunctella*, and Zeller's figure of the preceding, not being at all aware there were two species so closely allied. But as Stephens makes no mention of the brown double line proceeding from the base of the wings, his description cannot apply to this species, and is more applicable to the preceding; and Hübner's figure of *cerasifoliella* also wants the double lines, and is probably identical with the preceding, therefore his name certainly cannot be applied to this species, and that of Zeller's must be retained. Wood's figure represents this species. We probably have both species in this country, but I am not aware of having seen any specimens of *suffusella*.*

"This species differs from the preceding in being smaller, and especially by the brown double line, which goes from the base of the anterior wings to the middle of the disk.

"This species is just as plentiful as the preceding, and flies on calm, warm, or even cool evenings, at the end of April and in May, then from the middle of June to late in the autumn. It only flies among willow-bushes."

In Zeller's genus *Cemiostoma* he has three species, two of which occur here.

"Sp. 1. *Spartifoliella*, Hübn." Linn. Ent. vol. 3, p. 273. Vol. 2, pl. 2, f. 35—39.

This is the species described by me, under this name, in the "Zoologist," p. 2158, and is the *spartifoliella* of Stephens, and the *punctaurella* of Haworth.

* Since writing the above I have obtained a specimen of *suffusella*, which I beat off a Lombardy poplar, at Lewisham, on the evening of the 25th of June.

"Sp. 2. *Zanclæella*, Z." Linn. Ent. vol. 3, p. 277.

"This species is considerably smaller than the preceding, and easily distinguished from it by the want of the yellow costal streak beyond the middle of the anterior wings.

"Of *Zanclæella* (placed, in my descriptions of Italian species, as an *Opostega* without a name) I took two specimens near Messina in March and April, which I took for our *spartifoliella*. The place in which I beat them from the bushes of Arbutus unedo and Cytisus triflorus, contains, as far as I recollect, no Spartium junceum. Probably this scarce species feeds on the Cytisus."

"Sp. 3. *Scitella*, Metzn." Linn. Ent. vol. 3, p. 278.

This species, the *Clerckella* of Stephens, is described by me under the name of *scitella*, in the Zoologist, p. 2157.

In Zeller's genus *Opostega* (as now restricted), he has four species, of which two are known to us.

"Sp. 1. *Salaciella*, Tischer." Linn. Ent. vol. 3, p. 280. Vol. 2, pl. 2, f. 42, 43.

This species is briefly described by me in the Zoologist, p. 2081, in a note. It is the *cygnipennella* of Mr. Bentley's and many other cabinets.

"This is easily recognized in this genus by the spotless, snow-white anterior wings. It would be most readily confounded with the ♀ *Elach. cygnipennella*, which, being generally smaller than its ♂, comes very near to *salaciella* in size; but the quite simple antennæ of *cygnipennella*, not being provided with an enlarged joint at the base, readily distinguish it."

"*Salaciella*, discovered near Dresden by Tischer, is very scarce near Nixdorf, in Bohemia, and also occurs, according to Treitschke, near Vienna; and, according to Herrich Schaffer, near Ratisbon."

"Sp. 2. *Reliquella*, Z." Linn. Ent. vol. 3, p. 282.

"Hitherto I had considered a single female as a variety of *crepusculella*, in which the spot at the apex of the wing was wanting; however, the streaks in the middle of the costa and inner margin are also wanting, and the yellowish transverse streak at the apex is nearly straight. Besides, I have since obtained a male similarly marked, so that I can no longer doubt its being a distinct species. *Crepusculella* and *auritella* are easily recog-

nized by the black spot at the apex of the anterior wings. *Salaciella* has not a yellowish transverse streak; and the yellowish tint, though certainly in the same place as in *reliquella*, is very indistinct, and only visible in certain lights."

"I took my very beautiful ♀ near Glogau, on the 20th of June, on a grassy slope under aspen trees: my equally fine ♂ near Reinerz, on an open grass-plat, on the 16th of July, thus much later than the female."

"Sp. 3. *Auritella*, Hübn." Linn. Ent. vol. 3, p. 283.

Not the *auritella* of Stephens (which is the next species), and I believe not hitherto detected in this country.

"Size of the largest *salaciella*, easily distinguished from this and the second and fourth species, by the rather large brown inner marginal spot on the anterior wings."

"I obtained a pair from Mecklenburg." "A single ♀ was taken near Frankfort-on-the-Oder on the 25th of June, in a field, on a thistle."

"Sp. 4. *Crepusculella*, F. v. R." Linn. Ent. vol. 3, p. 284. Vol. 2, pl. 2, f. 40, 41.

This is the *auritella* of Stephens, and Wood's figure 1416 represents the species very distinctly.

"This species occurs near Reichstadt, in Bohemia, where, according to F. v. R.'s notice, it flies in July, on the margins of ponds, from half-past seven to eight, neither earlier nor later. Near Glogau I found it in moist shady places in alder or other leafy woods, in the second half of June and in July, always scarce and singly, yet not always at twilight, but in cloudy weather also in the afternoon. It keeps quite low in grass and weeds."

In Zeller's genus *Bucculatrix* he has nine species, five of which are decidedly British.

"Sp. 1. *Cidarella*, Tischer." Linn. Ent. vol. 3, p. 287.

"Easily distinguished in this genus by the brown anterior wings, with two pair of whitish opposite spots."

I must confess to some uneasy doubts, whether this be not identical with my *Demaryella* (Zoologist, p. 2157); but on a very close examination of my single specimen, I have been unable to discover any *eye-caps*, but the hairs of the head are so long, it is quite possible they may be there, but concealed: the hinder tibiæ

are certainly clothed with long hairs, as Zeller describes *cidarella;* but he makes no mention of an indistinct basal streak, and in the disposition of the spots there are several discrepancies. His insect frequents alders in May, June and July.

"This little known species occurs in Bohemia very rarely (F. v. R.); in Saxony, near Schandau, (Tischer); near Glogau, on alder bushes, in May, and the beginning of June, scarce; probably also in July, in Prussia, near Dantzic, (Tiedemann); and in Livonia, at Kohenhusen, (Lienig); in Tuscany, near Pratovecchio, at the beginning of June, on the stems of alders, (Mann)."

"Sp. 2. *Ulmella*, Mann." Linn. Ent. vol. 3. p. 288.

This is the species described by me as *Sircomella*, in the Zoologist, p. 2162. As this description was only published on the 1st of July, and Zeller's description is already published, and in this country (June 13th), *Sircomella* must sink, and the name of *ulmella* be retained. This is the *cuculipennella*, var. δ of Haworth.

"Sp. 3. *Cratægi*, Z." Linn. Ent. vol. 3, p. 290.

This is the species described by me in the Zoologist, p. 2161, under the name of *cratægifoliella*, and is the *cuculipennella* var. γ of Haworth.

"Sp. 4. *Boyerella*, Dup." Linn. Ent. vol. 3, p. 291. Vol. 2, pl. 2, f. 44—46.

This is the species described by me under this name in the Zoologist, p. 2161, and is the *cuculipennella* of Haworth and Stephens.

"Sp. 5. *Gnaphaliella*, Tr." Linn. Ent. vol. 3, p. 293.

"On the whole resembles the preceding, but readily distinguished by the concolorous, brownish-grey antennæ." In *Boyerella* they are white, with brown annulations.

"This species occurs near Dresden, abundant near Berlin and Glogau, in sandy places, amongst Gnaphalium arenarium. It appears first at the end of May, and in June and July, and again at the end of August and in September. In the day they sit concealed at the foot of the plants, but at evening or in rainy weather it is easily beaten out."

" Sp. 6. *Frangulella*, Goeze." Linn. Ent. vol. 3, p. 295.

This is the species described by me, (Zoologist, p. 2160,) as *rhamnifoliella*, Tischer, (described by Fischer), which name, however must sink, Goeze's name having priority by more than forty years. Goeze does not describe the species himself, but refers to De Geer's description and figure. The name, as it appears in his Entom. Beitrage, vol. 4, p. 169, is *frangutella*, which is evidently a misprint for *frangulella*.

" Sp. 7. *Hippocastanella*, Dup." Linn. Ent. vol. 3, p. 297.

This is the *tiliella*, Dale, (in litteris), and has not yet been described as British. Mr. Dale took his specimens in Leigh Woods, near Bristol, May 20th, 1845, flying amongst limes.

" The fine brown long line on the yellow anterior wings, from the middle to the apex of the wing, well distinguishes this species."

" This species is very abundant near Berlin, on old chesnut trees and limes." " I found it solitarily near Glogau, in a wood, and at Probsthainer Spitzberge; in both places only on lime trees." " It occurs in Silesia, also near Warmbrunn." " In Livonia, where Madame Lienig found the larvæ on limes, birches, and alders." " The perfect insect flies in May and June, and must, since Madame Lienig observed a second brood of the larva, fly a second time in July and August."

" Sp. 8. *Nigricomella*, Z." Linn. Ent. vol. 3, p. 299.
Vol. 2, pl. 2, f. 47.

" The very shiny, nearly bronze-coloured anterior wings, and the black hairs on the head, are peculiar to this among all its congeners."

I was at first strongly inclined to imagine this our *atricapitella*, but the size, " nearly the size of *gnaphaliella*," (which latter species Zeller compares to *Boyerella*,) appears to me an insurmountable objection; added to which, Zeller says, " Antennæ brownish, with the apex whitish," a peculiarity that *atricapitella* does not possess.

" Scarce in Bohemia, near Nixdorf and Reichstadt, in woods, in June and August; near Glogau likewise it is not abundant; Madame Lienig also took it in Livonia in May; Mann took three specimens near Pisa, on the 19th May, on dry grass-plats."

"Sp. 9. *Cristatella*, F. v. R." Linn. Ent. vol. 3, p. 300.

"Its concolorous dirty-grey, smooth anterior wings distinguish our *cristatella* in this genus; the structure of the antennæ distinguishes it from the much darker *Tischeria gaunacella;* its much smaller eye-caps, its smooth face and its narrower anterior wings, separate it from *Trifurcula immundella*."

"It flies in May, on sandy places overgrown with weeds; scarce, near Glogau, and easily overlooked, from its keeping so near the ground. On the 7th of May, 1841, towards evening, I fell in with a small company, which were swarming at one spot in the short grass. On one blade of grass sat a pair in copulâ, around which the remainder were flying. Whilst I had hardly pinned a pair of them, the whole company were as if blown away, and, notwithstanding a diligent search, I found no more."

I now come to Zeller's genus *Nepticula*, which includes nearly all our small *Microsetiæ* (that genus being very readily divisible into three sections, of which *quadrella*, *aurella* and *Pfeifferella* may be considered the types — the *aurella* section forming the genera *Nepticula* and *Trifurcula* of Zeller).

These insects, from their extreme smallness and the consequent difficulty of pinning and setting them, have hitherto been very much neglected in this country; indeed, till last year, very many of our collections had only one or two species. Our knowledge of them is therefore very limited, and this paper of Zeller's will be most useful in assisting us rightly to separate species and unite the sexes. Zeller has thirteen species of *Nepticula*.

"Sp. 1. *Samiatella*, Z." Linn. Ent. vol. 3, p. 303.

"Alis anterioribus flavo-virenti-æneis, apice violascentibus; antennarum conchula flavida, capillis maris nigris, feminæ ferrugineis.

"Known by the concolorous, clear-green bronzy anterior wings, which are violet posteriorly." Zeller gives as synonymes "♂ *Microsetia atricapitella*, Haw.—♀ *Microsetia ruficapitella*, Haw."

Now to this I cannot agree. *Atricapitella* and *ruficapitella*, I firmly believe, are distinct species; if I am not mistaken I have taken more than one pair of *atricapitella* in copulâ on a low fence near Beckenham; moreover I appear to have both sexes of both species; besides, *ruficapitella* is much the commoner, *atricapitella* being a rare or probably local species, whereas were it the male of *ruficapitella* it should be commoner, or at least equally com-

mon. I take both species on the stems of oaks, but *atricapitella* only rarely. *Samiatella* seems very scarce, according to Zeller's remarks. "This small species is still very scarce; I took a single one near Glogau, in May, on a leaf, in the sunshine, on the lower branch of an oak; here it ran quickly on the upper side of the leaf, here and there, and appeared to seek the honey dew."

"On the 9th of May, 1847, I found a male in a garden, where it flew from the bark of a thick chesnut tree into my forceps, and ran about very briskly. I saw a female from the neighbourhood of Warmbrunn, in Silesia. Mann found this species in June, near Reichstadt, in Bohemia, and near Vienna; also in Tuscany, near Leghorn and Montenero, on elms, in April." "From Bouché I obtained five specimens, decidedly belonging here, all males."

"Sp. 2. *Subnitidella*, F. v. R." Linn. Ent. vol. 3, p. 305.

"Alis anterioribus fuscis, apice violaceis; posterioribus flavidis cinereo-ciliatis; capillis nigris, conchula antennarum fuscescentium exalbida (1 ♂ Mus. Mann).

"Distinguished from all the species in this genus, except the male *rufella*, by the yellowish posterior wings, but from this readily distinguished by the deep black head."

"This flies near Vienna, among young ash trees, in May, very scarce (Mann)."

I am not aware that this species has been observed in this country.

"Sp. 3. *Aurella*, Fab." Linn. Ent. vol. 3, p. 306.

"Alis aureis, apice violaceo, fascia postica argyrea (in fem. utrimque violaceo-inclusa); capillis maris atris, fem. ferrugineis; conchula antennarum fuscescentium pallida (alis posterioribus maris pilosquamatis)."

"In this species also the anterior wings are shining violet at the apex, but towards the base golden or bronze, and posteriorly is a broad, silvery, somewhat of a yellowish tint, thence almost golden fascia. *Lemniscella* has, instead of a golden yellow colour between the fascia and the base of the wings, only a shining yellowish brown colour, and *centifoliella* has it of a violet brown."

"I have not found this species common near Glogau; it occurs in May, on the trunks of elms, in the crevices in the bark, from which it is difficult to get it out and catch it. I received two ♂ as *gratiosella* from Vienna, F. R., where it appears not to be scarce."

Among his synonymes Zeller gives *posticella*, Stephens (he should have said Haworth), the character of which appears to be the base of the anterior wings being of a *silvery brown*. This description of colour is so very unsatisfactory, and as Haworth himself says, "A variety of the following (*aurella*) or merely an old specimen;" and as his description, which is the one copied by Mr. Stephens, was made from only a single specimen, I think we may safely sink the name *posticella*. I am well aware that there is a very general idea that in *posticella* the silver fascia is placed more posteriorly than in *aurella;* the name certainly would seem to imply something of this kind, but Haworth makes no comparison whatever between the two species—his description of *aurella* being merely a copy of the Fabrician description. Zeller seems also to include with this species an insect which is in many collections as *pygmæella* (though hardly the *pygmæella* of Haworth, which appears to have been a small specimen of *ruficapitella*, as he makes not the slightest allusion to a silvery fascia), and which appears to me identical with the ♂ *gratiosella*, F. v. R. figured in Duponchel (Supp. pl. 77, fig. 4), and which I cannot but think a distinct species; it is little more than half the size of ordinary specimens of *aurella*, and frequents hawthorn bushes in May, flying in the sunshine about the twigs like gnats.

In this insect the anterior wings are of a paler golden at the base than in *aurella*, the fascia is nearer the apex and much straighter, and the head is black apparently in *both sexes*. The specimens which I have in my collection as *aurella* have all reddish heads, yet one of them appears to be a male; but I believe I have seen specimens apparently of the same insect with black heads.

Note.—Since writing the above I have examined Haworth's original specimens of the *Microsetiæ*, in the collection of the Entomological Society, and find that my conjecture as to *pygmæella* and *violacecella* being identical with *ruficapitella* is confirmed. His *posticella* appears distinct from *aurella*, and the fascia *is placed more posteriorly* and is straighter, but neither of these characters are mentioned in his description, so that I am still of opinion the name should sink."

"Sp. 4. *Lemniscella*, Z." Linn. Ent. vol. 3, p. 313.

"Alis anterioribus nitide brunneis, apice violaceo, fascia postica argyrea; capillis (♂ et ♀?) ferrugineis, conchula antennarum albida.

"After having removed, in my collection, as females of the

preceding, a pair which previously I had considered as this, I possess only two *lemniscella*, as a probably distinct species, and have two of Metzner's specimens for comparison. This *lemniscella* is so like the preceding, that I shall merely mention the difference. The anterior wings, to the naked eye blackish or brown, are under a lens *yellowish brown* to the fascia, darkest on the costa, with faint lustre, and without any mixture of violet or purple colouring. The fascia is in my small decided female very narrow, and placed obliquely. Posterior legs with thinner tibiæ shining clear grey. Antennæ of this specimen brown, on the underside shining yellowish. In the second specimen, which is pasted, and of which I cannot recognize the sex, they are throughout yellowish.

" The two specimens from Metzner, rather larger than mine, I can only consider as one species, although the one is considered as *lemniscella*, the other as *hemargyrella*. The only difference they show is, that in *lemniscella*, Metzn., the fascia on the anterior wings is yellower, and is posteriorly emarginated in the middle, and that the posterior wings are darker coloured on the surface and also the cilia. Both appear to me to be males; the abdomen with one especially is quite thin and flat, and in both it ends with a yellowish anal tuft, which divides into two longer little tufts. Their hairs-of-the-head are *pale yellow*, the eye-caps as usual, the antennæ greyish yellow and shining. On the anterior wings the cilia from the upper to the lower end of the fascia are clear grey; but on their basal half lie broad violet-brown scales, darker at the end, radiating at the apex of the wing, and there this is somewhat recurved, and in shade is black, so that it makes it appear as an ocellus. (In my specimens these scales are wanting, and the cilia pass gradually from the brown tint to gray.) These belong truly, as males, to *lemniscella*, so this is certainly a distinct species from the preceding, differing in the males by the colour of the hairs of the head."

" *Lemniscella* is scarce near Glogau on the trunks of elms: of Metzner's specimens, one *hemargyrella* is from Steyermark, the other from Silesia."

" Sp. 5. *Centifoliella*, V. Heyden." Linn. Ent. vol. 3, p. 315.

" Alis anterioribus violascenti-fuscis nitidulis, fascia postica argyrea; capillis ♂ nigris, ♀ ferrugineis; conchula antennarum pallida parva."

" This very small species differs from *lemniscella* by the anterior wings from the base being brownish, and with rather a violet

tint, which is only a little increased beyond the fascia,—from the larger following species by the much livelier tint of the fascia, which with it is also placed further towards the apex of the wing."

"One ♂, two ♀ agreeing in size, I received from Von Heyden, from the neighbourhood of Frankfort-on-the-Main, where the insect was bred in April, May, and August, from the leaves of the garden rose. Bouché takes it in his garden, at Berlin, sometimes very abundant, and certainly double-brooded."

I believe this species is the *aurella* var. ζ of Haworth, and exists in several cabinets; I have it, placed as the *nigrociliella* of Stephens, (which however it cannot be, as that insect must be closely allied to *subbimaculella*, if indeed it be a distinct species), and Mr. Bedell has it under the same name; and, early in June, this summer, I took several specimens off a low fence near Beckenham: the violet tint at the base of the anterior wings readily distinguishes it from its congeners.

"Sp. 6. *Argentipedella*, *Z.*" Linn. Ent. vol. 3, p. 316.

"Alis anterioribus fuscis, violaceo-nitidulis, fascia paulo post medium alba; capillis ♂ nigris, ♀ ferrugineis; conchula antennarum exalbida majore."

"Larger than the preceding, sometimes much larger, with very peculiarly expanded eye-caps, and on the anterior wings, placed more towards the base, with a shining white, not silvery, fascia, by which it differs from *aurella*, *lemniscella* and *centifoliella*."

"In the very fine pair which I have here described, and with which eleven specimens received from Bouché agree, the brownish-violet scales on the cilia at the apex of the anterior wings pass without any distinct margin into brown, but this suddenly into clear grey; so that the scales are wanting which, radiating from the apex of the wing, present the appearance of an ocellus. The male I took on the 17th of May, the female on the 25th of May, both in birch woods near Glogau."

"This species mines in the birch leaves near Berlin (according to Bouché).

This is the *medio-fasciella* of Haworth; but I much doubt whether Haworth's description is sufficiently precise to enable his name to stand. He says, "Priori* simillima at minor, alis anticis

* The preceding to which he alludes, *unifasciella*, is, it appears to me, a faded specimen of the species called, in this country, *Albinella*: the head is entirely wanting, and the wings are very much wasted.

atris, fascia argentea magis in medio, et certo situ lente aliquantalum interrupta. Posticæ latiores quam in priore saturatiores, seu nigro-plumbeæ."

The *aliquantulum interrupta* gives one of the most decisive characters of the species, and Haworth's original specimen is fortunately in very fine condition, and shows this character well.

"Sp. 7. *Argyropeza*, Z." Linn. Ent. vol. 3, p. 320. Vol. 2, pl. 2, f. 49, 50.

"Alis anterioribus grosse nigricanti-squamatis, postice violascenti-subnitidulis, apice rotundato, albido-ciliato, maculis duabus mediis oppositis albidis; capillis ferrugineis; conchula exalbida."

"? Var. *b*. major; macula costali alarum anteriorum apici propiori."

"? Var. *c*. major; strigula ex costa prope basim obliqua dorsoque basali albidis, ceterum ut *b*."

"Distinct from all the preceding by the head of the male being similarly coloured to the female. Besides, the anterior wings, which appear widened and rounded posteriorly, have in the middle two, not sharply defined, whitish opposite spots; and in the larger and questionable variety *c*, another oblique whitish spot on the costa near the base."

"I found this species very abundant on the trunks of aspens on the fortifications of this place, on the smooth bark of which they sat, and were easily caught; elsewhere, I have beaten it from the leaves of young aspens. I know not whether I took the varieties b, and in company with the ordinary small specimens.—Period of flight, May. It is probably widely dispersed. It is taken abundantly near Dantzig, by Von Tiedemann (I have before me, from him, a wasted but very recognizable ♀ of var. *c*.) Madam Lienig took it in Livonia; F. v. R. not scarce in Bohemia."

This species comes very near to the *subbimaculella* of Haworth, but appears to me distinct, for the following reasons, 1st, in *subbimaculella* the base of the wing is very generally yellowish, broadest on the inner margin. 2nd, the spots, though placed apparently in the same position, are yellowish, not whitish. (Haworth must have had a bad specimen before him when he said "*silvery;*" his original specimen labelled by him is by no means a fine one.) 3rd. The cilia at the apex of the wing are also yel-

lowish; whereas, in *argyropeza*, Zeller says, "Cilia clear-grey, scarcely tinted, a little yellowish." 4th. Our insect *swarms* on *oaks* in June; his frequents aspens in May. The second and third of these differences are commented on by Zeller in a note; but he says, "the third and weightiest arises from the want of certainty that this *subbimaculella* is a *Nepticula*, since the genus *Microsetia* contains smooth-headed and rough-headed species,—species with and species without the enlarged basal joint of the antennæ; and in no species does Stephens inform us of the nature of the parts of the head."

"Sp. 8. *Intimella*, Z." Linn. Ent. vol. 3, p. 323.

"Alis anterioribus violaceo-fuscis, macula dorsi medii argentea, ciliis externe canis; capillis ferrugineis; antennis cum conchula exalbidis."

"A single female, the size of a small *argyropeza*, and very similar to the female of that species. Ground-colour of the anterior wings dark violet brown, the cilia at the apex encompassed with a dark ring of scales. The specific distinctions appear to be the following: the costal spot is wanting on the anterior wings, as also the other spot; only, the inner marginal spot is here, nearly triangular, placed on the margin in its usual situation, but *shining silvery white*, &c."

"I took this single specimen near Glogau; but I know nothing further about it."*

"Sp. 9. *Hemargyrella*, Koll." Linn. Ent. vol. 3, 323.

"Alis anterioribus exalbidis nitidulis, apice fusco-violaceo; capillis pallidis; antennis fuscescentibus, conchula exalbida."

"Smaller than *argyropeza*, easily known from it, since the anterior wings are yellowish white from the base to rather beyond the middle.

"I took this scarce species in May twice on the trunks of aspens on the fortifications of this place; I saw a single specimen from the neighbourhood of Laubau, and two others from the Riesengebirge. Besides it occurs near Vienna in beech woods. Closely allied apparently to *floslactella* of Haworth, but in that species is a distinct black fascia across the yellowish portion of

* Mr. Sircom met with this species among *sallows*, near Brislington, about the middle of June, this year.

the anterior wings, near the middle, of which Zeller makes not the slightest mention.

" Note.—I find that Haworth's *floslactella*, var. *β*, wants the black fascia above alluded to, and is probably therefore identical with *hemargyrella*.

" Sp. 10. *Sericopeza*, Z." Linn. Ent. vol. 3, p. 325. Vol. ii. pl. 2, f. 48.

" Alis anterioribus fuscis, basi, fascia curva media maculisque duabus oppositis posticis pallidis; capillis ferrugineis, conchula albida, antennis fuscescentibus."

" The size of var. *b* and *c* of *Nept. argyropeza*, known by the yellowish fascia, and the posterior opposite spots of the anterior wings. The much smaller *trimaculella*" (he means *cursoriella*) " wants the fascia, and has only a yellowish streak from the base along the inner margin. *Assimilella* is likewise much smaller, and has, instead of the fascia, a discoïdal spot, which is almost connected with the yellowish base.

" The equally small *rufella* has, instead of the yellowish fascia, near the basal third of the wing clear yellow; but is especially distinguished from all other species of *Nepticula* by the red abdomen of the male."

" Occurs in the neighbourhood of Berlin and Vienna. Many specimens are taken on the trunks of trees in the Thiergarten at Berlin. Near Vienna, Mann finds it on garden palings under acacias, in the Prater on maple, first in May, then in July and August. He took it also near Salviano in Tuscany on maple, at the beginning of May."

" This species is also closely allied to *floslactella*. Indeed *floslactella* seems exactly intermediate between this and the preceding, having a dark fascia, which *Hemargyrella* wants, and wanting the dark patch (between the yellow base and yellow medial fascia) of *sericopeza*.

" Sp. 11. *Cursoriella*, Heyden." Linn. Ent. vol. 3, p. 326.

" Alis anterioribus fuscis, striola dorsi ex basi prodeunte maculisque duabus posticis oppositis flavidis; capillis ferrugineis; conchula exalbida, antennis fuscescentibus. (1 ♀ Mus. Mann.)"

" Only a single but very beautiful female, communicated from V. Heyden to Mann. It appears very like my ♀ of *argyropeza*,

which it also resembles in size; but on the anterior wings of *cursoriella* the two spots lie more obliquely to one another, and its inner margin at the base is yellow. The likewise very similar *assimilella* wants the inner marginal streak, which also has a yellowish spot on the disk.

"At Frankfort-on-the-Main (V. Heyden) and at Vienna in the Prater, on fences in June. (Mann.)"

I should have said undoubtedly this was the *subbimaculella* of Haworth; but that Zeller says "cilia clear grey." The yellow base (which is so frequently continued on the inner margin), the yellow spots placed obliquely to one another, are here fully described; but Zeller says cilia clear grey (hell grau). Now in our species they are the same colour as the spots, yellowish.

Zeller gives, as a doubtful synonyme, *trimaculella*, Haworth, Steph. Now in the first place the *trimaculella* of Stephens is not the *trimaculella* of Haworth: it is quite true that Mr. Stephens has copied Haworth's description, but he has *added to it four words*, which will not apply to Haworth's species. At the same time the remainder of Haworth's description will hardly apply to any other species; so that the description in the Illustrations being a patchwork concern, half applying to one species and half to another, is good for nothing. The *trimaculella* of Haworth is the *rufella* of Zeller; and Haworth's name, having priority, must stand.

Haworth says (Lepidop. Brit. 583, 82):

"Alis atris, striâ latâ basi, maculisque duabus posticis flavicantibus.

"Habitat forte in populo. Imago i. Jul. Populi truncis, at rarissime. Exemplarium unicum quod cepi sedentem solum vidi.

"Expansio alarum $2\frac{3}{4}$ lin.

"Descriptio: præcedentibus minor. Alæ anticæ atræ, striâ latissimâ emarginatâ, a basi fere ad medium lutescente, maculisque duabus posticis oppositis marginalibus fere confluentibus flavescentibus."

Stephens says (Illustr. 4, 267):

"Alis anticis atris, striâ latâ basi, maculisque duabus posticis flavicantibus.

"Anterior wings deep black, with a very broad emarginated yellowish streak, reaching from the base to near the middle OF THE INNER MARGIN, and two spots towards the apex, placed one on the costa, the other towards the hinder angle and sometimes nearly confluent: posterior wings dusky black."

"Rare: found at the beginning of July in the vicinity of London, in gardens."

Note.—This is unfortunately not an isolated instance of Haworth's good descriptions being spoilt by the interpolation or addition of two or three words by Mr. Stephens. And Mr. Stephens must not be surprised at continental entomologists criticising severely his Illustrations, which were written, especially the *Micro-Lepidoptera*, in much less time than is absolutely necessary for the examination of these minute insects. English entomologists, who have access to Mr. Stephens, are aware that he really does know a very great deal about insects, and far more than any one, from studying his Illustrations, could imagine; but foreign entomologists have not the same means of satisfying themselves upon this point, and therefore Mr. Stephens must excuse their passing harsh judgments upon him.

"Sp. 12. *Assimilella*, Metzn." Linn. Ent. vol. 3, p. 327.

"Alis anterioribus fuscis, basi, macula disci prope eam maculisque duabus posticis oppositis exalbidis; capillis ferrugineis; conchula albida, antennis fuscescentibus. (Specim. 2, Mus. Metzn.)"

"The size of *argyropeza* ♀ differs from that in the yellowish-white spots on the anterior wings being placed more posteriorly, and by the presence of a large pale spot on the disk near the base. *Sericopeza* is slightly larger, and has, instead of this spot, a fascia. *Rufella* ♀ has the entire base, as a very large spot, yellowish."

"A fine female, and a specimen which wants the posterior wings and abdomen (so that I can only suspect it to be a female), were sent me by Metzner to describe; both are from Vienna." In possessing three spots on the anterior wings, this offers some resemblance to Bedell's *quinquella* (Zoologist, p. 1986), but in that insect the odd spot is near the apex; in *assimilella* it is near the base; besides all the *quinquella*, I have seen, have the head black, whereas *assimilella* has it reddish.

"Sp. 13. *Rufella*, Z. (Scop.?)" Linn. Ent. vol. 3, p. 328.

"Alis anterioribus fuscis, basi tale maculisque duabus posticis oppositis pallidis; abdomine pedibusque maris vitellinis, feminæ cinerascentibus."

"Very distinct in the male sex, by the egg-yellow coloured abdomen, as in *Pseecad. echiella;* the female is known, in this genus, by the large pale-yellow spot which proceeds from the base of the anterior wings, and takes up nearly the whole breadth of the wing."

"This scarce species occurs near Glogau, where I took three specimens, one of which is a female, beating them out of an elm bush in the middle of May; also near Reichstadt, in Bohemia, (F. R.), and near Vienna (Metzner). If Scopoli's *Phal. rufella* be identical with my species it occurs also near Laybach."

I do not think Scopoli's description is sufficiently precise: he says—"Anterior wings dirty ashy-grey; body and legs red; posterior wings very narrow." He makes no mention of *any spots* on the wings. His description of the "body and legs red" answers exceedingly well for the male of this species; and had he omitted to mention the anterior wings altogether I should have considered his name entitled to stand, but as it is I think there cannot be two opinions about the propriety of sinking it.

Haworth's *trimaculella* (see description among the remarks on *cursoriella*) is manifestly this species, which is found sparingly near London on the trunks of poplars in May and July, and his name will stand.

Zeller alludes (p. 330) to some other species of *Microsetia* of Stephens, which may belong to this genus; viz. *floslactella*, *violaceella*, *pygmæella*, and *sericiella*. *Floslactella* and *pygmæella* I have already alluded to: *violaceella* (described by Haworth from a single specimen) I conceive to be a fine specimen of *ruficapitella*: *sericiella* has nothing whatever to do with this genus, nor even with the genus *Elachista*, and is, I believe, identical with the *Tinagma saltatricella*, figured in Duponchel's Supp. vol. iv. pl. 86. fig. 12.

In Zeller's genus *Trifurcula* he has two species.

"Sp. 1. *Pallidella*, F. v. R." Linn. Ent. vol. 3, p. 332. Vol. ii. pl. 2, figs. 51, 52.

"Alis anterioribus exalbidis, obscurius grosse squamatis; posterioribus cinerascentibus, exalbido-ciliatis."

"Larger than the following, size of *Cemi. spartifoliella*; wings silky; the anterior very pale yellowish-white on both sides; on the upper side with coarse very pale ochreous scales, more numerous towards the apex."

"Mann discovered this scarce insect, and took it in May and June, near Tivoli, where it flew heavily among long grass late in the evening; also near Pisa it frequented the long grass, mixed with low bushes, in the marshes."

"Sp. 2. *Immundella*, Z." Linn. Ent. vol. 3, p. 332.

"Alis anterioribus nitidulis, albido-griseis, obscurius grosse squamatis; posterioribus griseo-ciliatis."

"Distinguished from the larger preceding species by its dirty grey but rather shining colour; from *Buccul. cristatella* by the lighter-coloured, coarsely-scaled anterior wings," "the possession of a tongue and a quite different neuration of the wings."

"This is abundant near Reichstadt, in Bohemia, on oaks, in July (F. R.). I took it once at Glogau, towards sunset, on the 8th of June, in a birch wood on Spartium scoparium, in company with *Anarsia spartiella* and *Cemiostoma spartifoliella*. Mann obtained some specimens from Spartium, in Tuscany, among the Apennines, near Pratovecchio."

This insect is in several cabinets as the *pulverella* of Bentley, but I believe has never been described; Bentley's name will therefore sink and Zeller's be retained. Zeller first described this in the Isis, 1839.

Zeller's genus *Tischeria* contains five species, two of which only are known to us, and form part of the genus *Aphelosetia* of Stephens.

"Sp. 1. *Complanella*, Hübn." Linn. Ent. vol. 3, p. 335. Vol. ii. pl. 2, figs. 53—57.

This is the *rufipennis* of Haworth, the *rufipennella* of Stephens, and abounds on oaks in May and June.

Haworth, however, gives unhesitatingly as a synonyme *Tinca rufipennella*, Hüb., which is a *Gracillaria!* and in Stephens' description is an important error; instead of "apex palest" it should be "apex darkest," as indeed the Latin diagnosis shows: the *fulvescens* of Stephens (Illust. 4, 289) is also this species.

"Sp. 2. *Rieciardella*, Costa." Linn. Ent. vol. 3, p. 337.

Zeller merely alludes to Costa's figure and description of this insect (Faun. Neapol. Tin. p. 16, No. 14, tab. 3, fig. 7), which do not agree with one another. Zeller had not, I believe, ever seen the species.

"Sp. 3. *Emyella*, Dup." Linn. Ent. vol. 3, p. 338.

Undoubtedly the *Recurvaria marginea* of Haworth, the *Aphelosetia marginea* of Stephens; neither of these authors, however, make any allusion to the dark spot at the anal angle of the anterior wings. This species is common here in May among oaks, but seems to occur in Germany only very rarely.

"Sp. 4. *Gaunacella*, F. R." Linn. Ent. vol. 3, p. 338.

"Alis anterioribus virescenti-fuscis, nitidulis, palpis flavidis."

Rather larger than the former, but much smaller than the following, and distinguished from it by the narrower anterior wings, and their pale colour without any violet tint. It resembles *Bucculatrix nigricomella* in the anterior wings, but this has a deep black tuft of hair on the head, and a large clear-yellow eye-cap, and the consideration of the structure of the antennæ always readily distinguishes this and other more remote concolorous greenish brown species from our *Tischeria*.

"The single female in my collection is the same size as the two males, and a somewhat violet, less yellowish tint of the anterior wings and concolorous antennæ.

"Mann discovered this species at Vienna; he took it also near Pratovecchio, in Tuscany, on sloe bushes, in the middle of June."

"Sp. 5. *Angusticollella*, Heyden." Linn. Ent. vol. 3, p. 339.

"Alis anterioribus latiusculis, cupreo-fuscis, nitidulis, costa ex basi chalybea, antennis apice albido."

"In size this comes next to *complanella;* differs from the preceding in the broader, pale coppery brown anterior wings, with the costa steel-coloured, and the whitish apices of the antennæ."

"This species was first discovered at Frankfort-on-the-Maine. From the discoverer Heyden I received a pair bred from the larvæ. The larva, the same form as that of *complanella*, mines in rose-leaves. Schläger found this species at Jena, in May, on fences principally under sloe-bushes. In Tuscany it is not very scarce in May, on sloe-bushes, near Leghorn and Pisa."

Having now come to the end of Zeller's paper, I would advise all my readers to get the "Linnæa," and read Zeller's own descriptions for themselves. They certainly are models of what descriptions ought to be; and the plan of mentioning at first what peculiar character distinguishes each species from its congeners saves much time to the entomologist, who, having met with a new species, wishes to find if it has been described by Zeller. I observe we are promised in the next volume of the "Linnæa" a monograph by Zeller of the genus *Colcophora*, corresponding to our *Porrectaria*, and a portion of the genus *Astyages*, the appearance of which will be anxiously looked for by a large number of entomologists in this country.

SYNOPSIS OF SPECIES HEREIN ENUMERATED.*

		Synonyms.
Lyonetia.....	Clerckella.....	nivella, St., semiaurella, St.; autumnella, C.
	prunifoliella.	
	padifoliella.	
	pulverulentella.	
Phyllocnistis	suffusella	unipunctella, St.?
	saligna	cerasifoliella, Sta.
Cemiostoma	spartifoliella	punctaurella, Haw.; spartifoliella, St.
	Zanclæella.	
	scitella	Clerckella, St.
Opostega	salaciella.	
	reliquella.	
	auritella.	
	crepusculella.....	auritella, St.
†Bucculatrix	cidarella.	
	ulmella	Sircomella, Sta.
	cratægi	cratægifoliella, Sta.
	Boyerella	cuculipennella, Haw., St.
	gnaphaliella.	
	frangulella.....	rhamnifoliella, Sta.
	hippocastanella....	tiliella, Dale.
	nigricomella.	
	cristatella.	
Nepticula	Samiatella ♂.....	atricapitella, Haw., St.
	Samiatella ♀.....	ruficapitella, Haw., St.
	subnitidella.	
	aurella.....	aurella, Haw., St.
†	lemniscella.	
	centifoliella.....	aurella, var. ζ Haw.
	argentipedella.....	mediofasciella, Haw., St.
	argyropeza.	
	intimella.	
	hemargyrella.....	floslactella, var. β. Haw.
	sericopeza.	
†	cursoriella	subbimaculella, Haw.? St.?
	assimilella.	
	rufella.....	trimaculella, Haw. (non St.)

* Those in *Italics* have not yet been discovered in this country; those with a † prefixed I am not certain whether they have or not.

	Synonyms.
Trifurcula.....	*pallidella.*
	immundella .... pulverella, Bentley.
Tischeria.....	complanella .....rufipennis, Haw.; rufipennella, St.; fulvescens, St.
	Ricciardella.
	Emyella.....marginea, Haw., St.
	gaunacella.
	angusticollella.

XXXI. *On the Synonyms of* Tinea festaliella *of* Hübner. *By* H. T. Stainton, Esq.

[Read 6th November, 1848.]

Few insects have ever had a more perplexed synonymy than this; in this country it has been successively referred to two other Hübnerian species; and in France, Duponchel has figured another insect as *festaliella*, whereas he figures the true *festaliella* as a new species. The synonyms of this insect are as follows:—

Tinea festaliella, Hübner, 449.
Œcophora festaliella, Treitschke, 10, 3, 213, (non Dup.)
Elachista festaliella, Zeller, Isis, 1839, s. 212, 17.
Elachista festaliella, Lienig, Isis, 1846, s. 299.
Tinea scissecla, Haworth, Lep. Brit. 580, 69, (non Hüb.)
N. G. scissella, Stephens's Cat. 7382.
Chrysocorys scissella, Curtis, Brit. Ent. vol. xiv. pl. 663.
Chrysocorys angustipennella, Stephens's Illust. 4, 282, (non Hüb.)
Chrysocorys angustipennella, Wood, f. 1402.
Elachista Montandonella, Duponchel, XI. 553, pl. 309, f. 11.

The origin of all this confusion probably arises from the fact of Hübner's figure not being a good one; yet the insect certainly agrees far better with his figure than with that of *scissella*, No. 270, and this was remarked by Mr. Curtis.

Treitschke's description is not good; indeed, Zeller says of it, "unkennbar beschrieben" (Isis, 1839, s. 212, 17); but there is sufficient character about it to recognize the insect.

Zeller's description, though very short, is precise, and leaves no doubt upon the mind of the species he intended.

Madame Lienig does not describe the insect, she merely records its occurrence.

Haworth describes the insect efficiently, but errs in referring it to Hübner's *scissella*. The *scissella* of Hübner is not known to recent continental writers; but, judging from his figure, the anterior wings are narrower than in *festaliella*, and, instead of having two dark lines from the base to the hinder margin, there is but one, which becomes furcate when it approaches the hinder margin, not much unlike the insect figured by Duponchel as *festaliella*.

In Mr. Stephens's Catalogue we again meet with the insect under the name of *scissella*, Hübner being referred to without any doubt, and below is given, as a synonyme, "*Ti. angustipennella*—?"

In Mr. Curtis's work appears a correct description and figure of the insect; and he there boldly asserts that it is not the *scissella* of Hübner, but either a species closely allied to *festaliella* of Hübner, or that insect itself.

We now come to Mr. Stephens's Illustrations, where the insect first assumes the name of *angustipennella* (by which name it is most generally known to the rising generation of English entomologists); but here it is not called *angustipennella*, Hübner, but is thus given: "*N. G. angustipennella*, Steph. Cat. 2, 211, N. 7382, *Schreckensteinia*, Hübner?" but, as before noticed, *angustipennella* is given in the Catalogue without any authority; therefore *angustipennella* must evidently be considered as *angustipennella*, Stephens. In the Appendix to the Illustrations, 4, 423, this insect is given twice; once rightly, as *Schreckensteinia festaliella*, N. 4083; and again incorrectly, as *Cosmopteryx angustipennella*, N. 4128; but this Mr. Stephens appears to have been doubtful about, as he places a note of interrogation to it.

The true *Cosmopteryx angustipennella*, Hübner, (*Tinea pedella*, L.,) is an insect allied to *Graeillaria præangusta*, Haw., (*Turdipennella*, Tr.,) and frequenting alders; I am not aware that it has occurred in this country.

The insect figured by Duponchel he received from Fischer von Roslertamm, who states that "it flies in great numbers in May on the flowers of Sambucus racemosa, and Mann has taken single specimens around pine trees:" this certainly does not appear applicable to our species. Duponchel's description is extremely vague, and his figure does not represent our insect, neither am I acquainted with the species for which it is intended. The figure given by Duponchel of *Montandonella* correctly represents this species, but the description is slightly deficient.

XXXII. *Descriptions of several new Species of Cetoniidæ collected in India by Col. Hearsey, Capt. Boys, and W. H. Benson, Esq.* By J. O. Westwood, Esq., F.L.S. &c.

[Read December 4th, 1848.]

Family CETONIIDÆ.

Sp. 1. *Heterorhina porphyretica.* (Pl. XVI. fig. 1.)

H. nigro-cærulea, opalina, capite et pronoto viridi-tinctis, elytrorum marginibus purpureis, antennis pedibusque nigris, clypei maris apice emarginato, verticeque spina plana conica armato, mesosterno elongato tenui subacuto.

Long. corp. lin. 8.

Habitat in India Septentrionali.

In Mus. nostr. D. Boys.

H. amœnæ, Hope, proxima.

Caput nigrum, cæruleo-opalinum, punctatum, lateribus ante antennas deflexis, margine antico reflexo emarginato, disco concavo, in mare carina plana mediana, antice in laminam decumbentem conicam desinente, armato. Antennæ nigræ, clava longitudinem articulorum basalium æquanti. Palpi picei. Prothorax nigro-cæruleus opalinus, viridi parum tinctus, lateribus haud angulatis, tenue marginatis, disco nitido punctato. Scutellum concolor. Elytra magis purpurea, lateribus purpureis nitida, singulo lineis tribus longitudinalibus elevatis, interstitiis lateribusque punctatis, duplici serie punctorum, lateribus postice convergentibus apiceque suturæ parum acuminato. Pedex transverse strigosus. Corpus subtus cum femoribus cæruleo-opalinum, lateribus metasterni cum coxis semicirculariter punctatis, mesosterni processus cum apice antico metasterni valde elongatus tenuis acutus, parum incurvus. Pedes elongati. Tibiæ et tarsi nigri, tibiæ 4 posticæ intus luteo-setosæ. Abdomen impressione ovali oblonga ad segmentum 5m ventrale extensa.

Fig. 1. Insectum magnitudine paullo ampliatum ; 1 *a*, tibia antica maris ; 1 *b* et 1 *c*, processus sternalis.

Sp. 2. *Protætia piperina.* (Pl. XVI. fig. 2.)

P. olivaceo-fusca, opaca ; pronoto et elytris squamis minutis

albidis irroratis, squamis in lineas longitudinales et transversas interdum dispositis, pedibus cupreo-nigris luteo-setosis.

Long. corp. lin. 9½.

Habitat in partibus septentrionalibus Indiæ Orientalis.

In Mus. nostr. D. Boys.

Caput cupreo-æneum, rude punctatum, vertice subconvexo, margine antico parum reflexo et in medio emarginato. Antennæ piceæ, clava mediocri subcuprea. Maxillæ elongatæ, lobo interno inermi, lobo apicali acuto corneo, longè penicillato. Mentum ovale, basi truncato, apice profunde inciso. Prothorax olivaceo-fuscus, opacus, punctatus, lateribus paullo angulatis margineque tenui cupreo instructis; disco squamis seu guttis minutis albidis irrorato, his squamis pone medium in lineam valde angulatam (literam M quodammodo simulantem) dispositis, spatio postico squamis fere destituto. Scutellum concolor, opacum. Elytra elongata, lateribus (nisi ad humeros) fere parallelis, olivaceo-fusca, opaca, etiam albido-irrorata, squamis ad latera ante medium in lineam brevem transversam fere ordinatis, aliis pone medium in maculam irregularem fere confluentibus, aliisque versus apicem suturæ in lineam brevem transversam digestis. Podex concolor, lateribus apiceque maculis irroratis ornatus. Corpus infra castaneo-fuscum, nitidum, albido-hirtum, lateribus abdominis albido-irroratis; medio abdominis et metasterni nitido immaculato. Processus sternalis brevis, ovalis. Abdomen maris segmentis 2, 3 et 4 ventralibus parum depressis, haud canaliculatis. Tibiæ anticæ dentibus tribus apicalibus, acutis, tibiæ 4 posticæ extus in medio obtusæ 1-dentatæ. Pedes cupreo-nigri, albido-hirti.

Fig. 2. Insectum magnitudine parum auctum; 2 *a*, maxilla; 2 *b*, mentum; 2 *c* et 2 *d*, processus sternalis; 2 *e*, tibia antica; 2 *f*, tibia intermedia.

Sp. 3. *Protætia Bensoni.** (Pl. XVI. fig. 3.)

P. viridis opaca, capite pedibusque cupreis, pronoto lineis duabus abbreviatis obliquis albis elytrisque pone medium albomaculatis, corpore subtus cupreo-purpureo.

Long. corp. lin. 8½.

* I am informed by W. H. Benson, Esq., to whom I am indebted for this species, that it "appears late in the season, and frequents the flowers of Syngenesious plants;" and I have great pleasure in dedicating so beautiful an insect to this very zealous Entomologist.

Habitat apud Mussoree et Landour, in regione Himalayana, Indiæ Orientalis.

In Mus. nostr. D. Benson.

Præcedenti brevior et latior. Caput supra igneo-cupreum punctatum, vertice inter oculos utrinque parum profunde impresso et magis punctato, linea lævi in medio relicta; lateribus ante antennas depressis, margineque antico emarginato. Maxillæ lobo interno quadrato inermi; apicali conico, longe setoso. Mentum elongato-cordatum, basi truncatum. Antennæ nigræ. Prothorax lateribus in medio haud angulatis, tenue marginatis, punctatus, viridis, opacus, angulis anticis lateribusque cupreis, utrinque (lateribus parallela) linea tenui irregulari abbreviata alba ornatus, margine postico ante scutellum emarginato. Epimera igneo-cuprea. Scutellum pronoto concolor. Elytra magis viridia opaca, ad humeros dilatata pone medium etiam paullo latiora, singulo costis duabus fere obliteratis, interstitiis lateribusque punctatis, et albido-setosis; singuli lateribus maculis 4 parvis irregularibus albis, 2nda majori et ad medium disci extensa, maculaque altera alba pone medium suturæ. Apex elytrorum acuminatus. Podex æneus punctatissimus, punctis duobus parvis albis distantibus. Corpus subtus cum pedibus cupreo-purpureum, nitidum, griseo-hirtum. Tibiæ anticæ extus 3-dentatæ, dente basali minori et e reliquis magis remoto quam in specie præcedenti. Tibiæ intermediæ in medio acuta spina armatæ.

Fig. 3. Insectum magnitudine parum auctum; 3 *a*, maxilla; 3 *b*, mentum; 3 *c* et 3 *d*, processus sternalis; 3 *e*, tibia antica.

Sp. 4. *Anoplocheila cænosa.* (Pl. XVI. fig. 4.)

A. fusca opaca, æneo parum tincta, punctata, setis luteis fere obsita; pronoto sparsim, elytris (nisi prope scutellum) maculis parvis sordide albidis fere omnino notatis, corpore subtus æneo, abdomine purpurascenti nitido.

Long. corp. lin. $6\frac{1}{2}$.

Habitat in partibus septentrionalibus Indiæ Orientalis.

In Mus. nostr. D. Boys.

Corpus parvum, breve, crassum, subconvexum. Caput parvum, cupreo-fuscum, punctatum, margine omni elevato et antice parum emarginato, setis aureo-luteis obsitum. Antennæ nigræ. Maxilla lobo interno in dentem validum arcuatum producto, lobo apicali robusto bidentato. Mentum subquadra-

tum, lateribus in medio parum rotundato-dilatatis. Prothorax lateribus in medio vix angulatis, æneo-fuscus, postice opacus, punctatus, luteo-setosus, maculisque nonnullis parvis sordide albidis notatus. Scutellum opacum, æneo-fuscum, apice rotundatum. Elytra prothorace parum latiora, humeris vix dilatatis, longitudine vix latitudinem excedente, æneo-fusca, subopaca, punctata, luteo-setosa, undique (nisi regione scutellari) maculis parvis sordide albidis plus minusve notata, apicibus sordide albidis. Podex omnino luteo-squamosum. Corpus subtus purpureo-æneum, nitidum, pectoris lateribus, pedibus, apiceque abdominis luteo-setosis. Processus sternalis haud antice porrectus, obtusus, fere rotundatus. Tibiæ anticæ 3-dentatæ, dentibus fere æque distantibus, dente interno minori.

Fig. 4. Insectum magnitudine parum auctum ; 4 *a*, maxilla ; 4 *b*, mentum ; 4 *c*, processus sternalis ; 4 *d*, tibia antica.

Sp. 5. *Anoplocheila brunneo-ænea.* (Pl. XVI. fig. 5.)

A. purpureo-fusca, opaca, capite, prothorace humerisque æneo-nitidis, punctata, luteo parum setosa, elytris sordide albido-irroratis, squamis plagam macularem irregularem ultra medium lateris formantibus.

Long. corp. lin. 6.

Habitat in partibus septentrionalibus Indiæ Orientalis.

In Mus. nostr. D. Boys.

Præcedentis magnitudo, at angustior et minus setosus. Caput parvum, margini omni elevato, antice paullo emarginatum punctatum, punctis cicatricosis; cupreo-fuscum, setis nonnullis sordide albidis. Antennæ nigræ. Mentum magis quadratum quam in præcedente. Prothorax purpureo-fuscus, punctatus, opacus, parte antica æneo parum nitida, setis sordide albidis sparsim vestitus, lateribus in medio parum angulatis. Epimera et elytra ad basin æneo-tincta. Scutellum fusco-purpureum, apice rotundato, opaco. Elytra punctata, concoloria, maculis minutis sordide albidis irrorata, maculis pone medium lateris in plagam parvam irregularem parum confluentibus. Podex concolor, sordide albido-irroratus, punctatus. Corpus subtus æneo-cupreum, nitidum, parum setosum, segmentis abdominis ad latera marginis postici macula parva albida. Tibiæ anticæ extus 3-dentatæ,

dentibus æque distantibus, interno minori. Processus sternalis haud porrectus, rotundatus, obtusus.

Fig. 5. Insectum magnitudine auctum ; 5*a*, mentum ; 5*b*, processus sternalis.

Sp. 6. *Anoplocheila ? argentifera.* (Pl. XVI. fig. 6.)

A. nigra, opaca, pronoto et elytris maculis magnis margaritaceo-argenteis variegatis, capitis angulis anticis acutis ; corpore infra nigro nitido.

Long. corp. lin. $5\frac{1}{2}$.

Habitat in partibus septentrionalibus Indiæ Orientalis.

In Mus. nostr. D. Boys.

Species elegans. Caput parvum, antice attenuatum, deflexum, haud concavum, marginibus parum elevatis, angulis anticis porrectis ; nigrum, rugose punctatum. Antennæ nigræ. Mandibulæ parvæ, formæ ordinariæ, parte cornea angusta, extus longe ciliatæ. Maxillæ elongatæ, lobo interno in dentem longum et acutum producto ; lobo apicali bidentato. Mentum oblongum, longe setosum, margine antico parum emarginato. Palpi labiales articulo ultimo crasso. Prothorax convexus, subconicus, punctatus, lateribus in medio paullo angulatis, velutinus, lateribus late et irregulariter argenteo-margaritaceis discoque nigro, colore nigro utrinque pone medium in maculam angulatam versus angulos posticos extensam, dilatato, punctoque nigro utrinque versus angulos laterales. Scutellum nigrum, apice albo. Epimera argenteo-margaritacea. Elytra punctato-striata, velutina, nigra, lateribus apiceque late et irregulariter argenteo-margaritaceis, hoc colore in medio fere ad suturam extensa, fasciam nigram irregularem pone medium formante. Podex sparsim punctatus, argenteus, lateribus anguste nigris. Corpus subtus nigrum, nitidum, punctatum, sparsim luteo-setosum, lateribus metasterni et abdominis femoribusque posticis maculis sericeis notatis. Tibiæ anticæ 3-dentatæ, dentibus æque distantibus, intermedio majori. Abdomen subtus ad basin late et minime profunde impressum. Processus sternalis brevis, nullo modo porrectus, antice rotundatus, ciliatus. Pedes nigri postici longe ciliati.

Fig. 6. Insectum longitudine fere duplo auctum ; 6*a*, clypeus ; 6*b*, mandibula ; 6*c*, maxilla ; 6*d*, mentum ; 6*e*, processus sternalis ; 6*f*, tibia antica.

Sp. 7. *Anthracophora Bohemanni.** (Pl. XVI. fig. 7.)

A. nigra, supra maculis concoloribus velutinis; elytris dimidio basali maculis numerosis fulvis, apiceque late fulvo; thorace subtus antice fulvo hirto, abdominisque lateribus maculis parvis griseis.

Long. corp. lin. 9½.

Habitat apud Landour in regione Himalayana Indiæ Orientalis. In Mus. nostr. D. Benson.

A. atro-maculatæ affinis.

Corpus latum, crassum, capite parvo, pedibusque brevibus. Caput nigrum, punctatum, vix convexum, margine antico fere recto et parum reflexo. Antennæ breves, nigræ. Maxillæ lobo interno corneo, in spinam acutam curvatam desinente, lobo apicali brevi corneo apice oblique emarginato, inde certo situ bidentatus apparet. Mentum antice latum, emarginatum, lateribus ad basin oblique convergentibus. Pronotum lateribus in medio vix angulatis; disco lævi, haud nitido, lateribus punctatis maculisque nigro-velutinis lateralibus duabusque alteris majoribus versus marginem posticum. Scutellum nigrum, opacum. Elytra lata, opaca, humeris haud valde dilatatis, nitidis, singuloque etiam inter humerum et scutellum spatiis duobus elongatis paullo elevatis et nitidis, interstitiis velutino-punctatis; dimidio basali nigro, maculis parvis fulvis, apiceque fulvo, ad suturam nigro-maculato. Podex niger, opacus. Corpus subtus nigrum, punctatum, pro- et metasterno fulvo-pilosis. Abdomen maculis parvis lateralibus griseis notatum. Processus sternalis brevis, latus, basi constrictus. Pedes breves, nigri. Tibiæ anticæ in medio bidentatæ, apiceque in dentem remotiorem terminato; tibiæ 4 posticæ in medio dente unico acuto armatæ.

Fig. 7. Insectum magnitudine auctum; 7 *a*, maxilla; 7 *b*, mentum; 7 *c* and 7 *d*, processus sternalis; 7 *e*, tibia antica.

Sp. 8. *Clinteria Hearseiana.*† (Pl. XVI. fig. 8.)

C. nigro-ænea, nitidissima, pronoti lateribus maculisque tribus

* This species was taken "on sweating oaks, at Rockville, Landour," on the Himalayas, by W. H. Benson, Esq., by whom it has been transmitted to me.

† I have named this species after my friend Colonel J. B. Hearsey, a very assiduous Indian Entomologist as well as Botanist.

posticis in triangulum dispositis, epimeris, maculisque 5 in singulo elytro, duabusque podicis albis, pedibus rufo-piceis.

Long. corp. lin. $6\frac{1}{2}$.

Habitat in partibus centralibus Indiæ Orientalis.

In Mus. nostr. D. Hearsey.

Species elegans. Caput nigrum, convexum, punctatum, antice angustatum, emarginatum, angulis anticis elevatis. Antennæ breves, piceo-nigræ. Maxillæ lobo interno quadrato inermi, setoso; apicali acuto, longe setoso. Mentum elongato-cordatum, basi truncatum. Prothorax nigro-æneus, nitidissimus, disco punctis minutis crebre sparsis, lobo postico impunctato, lateribus macula elongata antice et postice dilatata, ex angulis anticis ultra medium extensis, maculisque tribus rotundatis in triangulum dispositis, postico minori ad apicem lobi scutellaris posito. Elytra nigro-coracina, nitida, punctata, singulo striis seu costis tribus elevatis, maculisque quinque albis ornato, antica majori; duabus lateralibus duabusque remotioribus suturalibus. Pygidium vermiculato-punctatum, maculis duabus albis. Pedes piceo-rufi, tarsis nigris; tibiæ anticæ dentibus tribus acutis æque distantibus; posticæ 4 in medio acute 1-dentatæ. Abdomen lateribus albo-punctatis. Processus sternalis brevis, conicus, apice obtusus.

Fig. 8. Insectum longitudine duplo auctum; 8 *a*, maxilla; 8 *b*, mentum; 8 *c* and 8 *d*, processus sternalis; 8 *e*, tibia antica.

XXXIII. *On the Species of* Depressaria, *a Genus of* Tineidæ, *and the allied Genera* Orthotælia *and* Exæretia. *By* H. T. Stainton, Esq.

[Read Dec. 4th, 1848.]

The genus *Depressaria* is one of the most natural we have, and considering the variety of size in the different species, their extraordinary similarity of appearance is not a little remarkable. The food of the larvæ is very various, some of them feeding on the leaves of composite plants, others, and by far the greater portion, in the umbels or on the seeds or leaves of different species of Umbelliferæ; again, the larvæ of two species feed on the sallow, whilst the *Hypericum perforatum* affords a pabulum to another species.

Note.—The species marked † have not yet been detected in this country.

Orthotælia, Stephens.
Caulobius, Duponchel.
Hæmylis, Zeller.
Agoniopteryx, Treitschke.

Sparganiella, Thunb., Tr., D., Z.
Tostella, Hüb. 456.
Venosa (*Depressaria*), Haworth.
Venosa (*Orthotælia* and *Depressaria*), Stephens.

The larvæ of this insect feeds, as the name implies, on a *Sparganium*, but there is some dispute as to which of the species: Treitschke says *simplex*, Zeller says *ramosum*, not *simplex*. I have met with the perfect insect myself among *Sparg. ramosum*, and Mr. Edward Doubleday has reared it from larvæ found in the stems of this latter plant, in July: he states that the presence of the larvæ is easily detected by the withering of the flowers. The perfect insect appears at the end of July and beginning of August.

Duponchel states that it feeds on *Sparganium natans;* Guenée has, according to Duponchel, found the larvæ of this species at the base of the leaves of the *Iris pseudacorus*, but I am inclined to fancy that this is a distinct species, especially as it appears by Mann's Catalogue that another species, which he there calls "*Palustrella*, Tr. in litt.," occurs on the continent. I am not aware that this species has been described; it probably occurs in this country and needs but to be sought.

Exæretia, nov. gen.

Caput lævigatum. *Palpi* recurvati, articulo secundo infra setis instructo, articulo terminali acuto. *Antennæ* mediocres. *Alæ* anteriores latæ; *ante apicem aliquantulum contractæ;* cilia *brevia*, ad marginem posteriorem *emarginata*. *Alæ* posteriores elongatæ, ovales, emarginatæ ad angulum anale; cilia *brevia*. *Abdomen* depressum.

This genus is intermediate between the *Stenoma* of Zeller (an exotic genus) and *Depressaria;* in *Stenoma* "the anterior wings are broad before the middle, posteriorly narrowed;" in *Depressaria* they are, to use Zeller's words, "almost widened posteriorly," whereas in *Exæretia* they are narrowed beyond the middle and then again expanded; the cilia are much shorter than in *Depressaria*, in this respect resembling *Stenoma*.

Allisella, n. sp. (Pl. XVII. fig. 1.)

Alæ anteriores plumbeæ; striâ rufâ obliquâ à costâ ante medium; maculâ magnâ triangulare rufescente ante apicem, quæ supra costam stat, marginem interiorem suo apice tangens; in margine interiore hujus maculæ, quæ distinctior est, stat linea nigra obliqua.

This species is very distinct from any with which I am acquainted, and has at first sight somewhat the appearance of a *Peronea*.

Expansion of the wings 10—11 lines.

Head ashy-grey. Face ashy-grey. Palpi, the second joint is on the upper side whitish, smooth; on the under side thickly clothed with ashy-grey bristles; terminal joint dark tawny, not annulated. Antennæ grey. Thorax greyish. Abdomen greyish, with a large black spot in the middle; the anal tuft is yellowish. Legs and tarsi brownish on the outside, whitish inside. Anterior wings rather glossy leaden grey, with a rosy tint at the base toward the inner margin; a little before the middle is a short oblique rosy streak proceeding from the costa, and reaching only half across the wing, it terminates in a darker spot; parallel to this, a little beyond the middle, is a similar streak which reaches to the anal angle, and has in it a short black linear blotch; beyond this streak the entire apical portion of the wing is more or less suffused with reddish, and a darker shade proceeds from the anal angle to the apex, forming the outer side of the triangular blotch; the portion of the disk immediately following the black spot is

rather paler than the surrounding portion; before the commencement of the cilia is a dark marginal line; cilia at their origin grey, at their termination greyish-rufous, darkest round the apex of the wing. Posterior wings greyish, with dark marginal line before the paler cilia.

I have named this species after my friend Mr. Allis, who, at my request, most readily forwarded to me his specimens to be described. I mention this circumstance as some collectors have a dislike to parting with their specimens, however much they may be required for the furtherance of science; such persons may have fine collections, but can surely not expect to be considered scientific entomologists.

Three of Mr. Allis's specimens were taken in Yorkshire, near Rotherham, in June or July, and another on the coast, near Maryport, Cumberland.

DEPRESSARIA, Haw., St., Z.
HÆMYLIS, Tr., D.

Sp. 1. *Costosa*, Haw., St.
Depunctella, Podev., Hüb. 378., Tr., D., Z.
Yeatsana, St.?
Spartiana (*Tortrix*), Hüb. 199.

Distinguished from the somewhat similar *assimilella*, by the rufous cilia of the anterior wings.

This species is common in July and August among furze-bushes.

Sp. 2. *Liturella*, W. V., Tr., D., Z.
Sparmanniana, F., St.
Flavella, Hüb. 97.
Flavosa, Haw.

The larva of this species feeds on Centaurea jacea, in May. The perfect insect appears in July.

Sp. 3. *Pallorella*, Zeller. (Isis, 1839, S. 195.)

Very closely allied to the preceding, but distinct. Instead of the blotch near the anal angle, and the short streak towards the base, near the inner margin of that species, these two marks are here united into a continuous, rather stout line; at the base, just above the inner margin, is a distinct black spot, and in the apical portion of the wing the nervures are much more distinctly marked.

A scarce species; hitherto perhaps much neglected from being confounded with *liturella*. Mr. Weir took a specimen at Lewes,

last September, from reed thatch; one was taken near Lewes the previous autumn. Mr. Maitland took one at sugar, in the Isle of Wight, in September, and Mr. Ingall took it at Mickleham.

Sp. 4. *Ulicetella*, Stainton.
Umbellarum, Haw.
Umbellana, St. (non F.)

Distinguished from all its congeners by the radiating brown streaks on the straw-coloured anterior wings.

Not uncommon in this country among furze bushes in August; it appears totally unknown on the continent.

Sp. 5. *Assimilella*, (Tis.) Tr., F. v. R., D., Z.
Atomosa, Haw.
Irrorella, St.
Atomella, St.?

At once distinguished from *costosa*, with which it is sometimes placed, by the yellowish colour of the cilia of the anterior wings; in *costosa* they are rufous.

I took three specimens of this insect in a broom-field near Airthrey (in the neighbourhood of Stirling), July 15th and 16th, 1848.

The species has also been taken by Mr. Weir, at Tunbridge Wells; by Mr. Sircom and others.

The larva feeds, according to Fischer von Roslerstamm, on *Spartium scoparium* only, and is to be found from the beginning of April to the middle of May.

Sp. 6. *Nanatella*, nov. sp. (Pl. XVII. fig. 2.)

Alæ anteriores *breves*, obtusæ, pallidè ochraceæ, irroratæ numerosis atomis fuscis, quarum duæ longitudinaliter positæ conspicuiores sunt.

Allied to *assimilella*; anterior wings shorter and the apex less pointed; the colour of the anterior wings is paler ochreous, irrorated with fuscous atoms, two of which, near the middle of the wing, are conspicuous from their size; these are placed longitudinally, that nearer the base being the larger; there is but faint indication of a shoulder mark, and the dark blotch of *assimilella* is entirely wanting.

Expansion of the wings $6\frac{1}{2}$—$7\frac{1}{2}$ lines.

Head very pale ochreous. Face rather paler. Palpi pale ochreous, the second joint with ochreous bristles beneath, terminal joint not annulated. Antennæ fuscous. Thorax very pale ochre-

ous. Abdomen fuscous, with the sides and apex ochreous. Legs pale ochreous, the first pair anteriorly brown. Tarsi pale ochreous, spotted with brown. Anterior wings very pale ochreous, with numerous fuscous atoms; towards the hinder margin is darker shade, arising near the anal angle and reaching nearly to the costa; nearly in the middle of the wing are two or three black spots, placed longitudinally, of which that nearest the base is generally the largest; cilia pale ochreous, with a darker line running right through them from the apex to the anal angle. Posterior wings griseous, darkest towards the apex, with paler cilia, in which, close to the margin of the wing, is a dark line.

Mr. Douglas took two specimens of the insect in Charlton sand-pit, among the herbage, on the 12th of August, 1846. Mr. H. Doubleday has also a specimen.

Sp. 7. *Atomella*, W. V., Hübn. 240, Z.
Pulverella, Tr., F. v. R. pl. 32, f. 2.
Var. *Respersella*, Tr., F. v. R. pl. 33, f. 1.

This species is, according to Fischer, extremely variable; in this country it has hitherto been so scarce that we have no opportunity of judging of its liability to vary. It is not *very closely* allied to any other species, and is distinguished by the roundness of the apex of the anterior wings, and ordinarily by the pale costa. Mr. Stephens has one concolorous pale specimen, in which, of course, this latter character is wanting.

I am indebted to the liberality of Mr. Weir for the possession of this species; he bred it from larvæ taken near Tunbridge Wells, by sweeping in June, the perfect insect appearing July 20 and 21, 1848. He likewise took two by mothing, Aug. 16, 1847. Fischer informs us that the larva feeds on *Spartium scoparium*, *Genista Germanica*, and *tinctoria*, in May and June.

Sp. 8. *Arenella*, W. V., Tr., F. v. R., D., Z., Ev., Lie.
Gilvella, Hb. 96, St.
Gilvosa, Haw.
Var. *Immaculana*, St.

A common species, and generally distributed; appearing in July and August, and hybernated specimens occurring in the spring.

Mr. Stephens's specimen, described by him as *immaculana*, is merely an extraordinary variety of this species; it is very far from being "*totally immaculate*."

The larva feeds, according to Zincken (see Treitschke), on *Centaurea scabiosa* and *Sonchus Carolina;* according to Lienig, on *Centaurea jacea.*

Sp. 9. *Propinquella*, Tr., F. v. R., Z., Ev.
Gilvosa, var. β. Haw.

Till this year scarce in this country; it has now been taken in some plenty by Messrs. Bedell, Douglas, and Weir, the greater part of the specimens being beat out of thatch in August and September.

There is a variety of this species in which the fuscous blotch is obliterated.

Sp. 10. *Subpropinquella*, nov. sp. (Pl. XVII. fig. 3.)

Alæ anteriores elongatæ, apice obtuso, ochraceæ, punctis duobus nigris obliquè positis ante et maculâ fuscâ, rarè distinctâ, pone medium.

Allied to *propinquella*, but the anterior wings are much longer, nearly as long as in *arenella*, but considerably narrower; the apex is slightly rounded; the colour of the anterior wings is brownish ochre mottled, as in the darker parts of *propinquella;* there is very slight (indeed, hardly perceptible) appearance of a shoulder mark; before the middle are the ordinary two black spots, and above the upper one is generally a third smaller one; beyond these is a large fuscous blotch (rarely as prominent as in *propinquella*); and obliquely to this, a similarly coloured smaller blotch or spot.

Expansion of the wings, 8—9 lines.

Head ochreous. Face very pale ochreous. Palpi pale ochreous; the second joint beneath with ochreous bristles; the terminal joint with two brown rings, one near the base, the other towards the apex. Antennæ fuscous. Thorax ochraceous. Abdomen griseous. Legs pale ochreous. Tarsi, anterior pale ochreous, spotted with fuscous; posterior darker, unspotted. Anterior wings described above; cilia pale ochreous; posterior wings pale griseous, with paler ciliæ, in which is a darker line near the margin of the wing.

This species has been taken by Mr. Bond (to whom I am indebted for it), who beat it out of thatch in Cambridgeshire this autumn.

Duponchel's figure of *Heracliella* (pl. 290, f. 12) accords better with this species than with a continental specimen of *laterella*, which I have before me; but his description is too vague to throw any light upon the figure.

Sp. 11. *Alstræmeriana*, L. (S. N.), St., Z.
Alstræmiana, L. (F. S.), F.
Alstræmeri, Haw.
Alstræmerella, Tr., D.
Monilella, W. V.
Puella, Hüb. 82.
Albidella, Ev.

Not very common; occurring in April and August. The larva has not yet been observed.

Sp. 12. *Purpurea*, Haw., St.
Vaccinella, Hüb. 416, Tr., D., Z.

Not generally common; taken in some plenty by Mr. Weir out of thatch in August and September. The larva is still unknown.

Sp. 13. *Caprella*, nov. sp. (Pl. XVII. fig. 9.)

Parva; alæ anteriores griseo-*rufæ*, punctis duobus nigris obliquè positis ante medium, et pone medium punctis duobus albis, longitudinaliter positis.

Allied to *capreolella* and *purpurea*; larger than *purpurea*, less rosy, without the conspicuous blotch of that species, with two black spots placed obliquely to one another, and then two white spots placed longitudinally; smaller than *capreolella*, and the anterior wings less plain grey, more suffused with reddish.

Expansion of the wings 6 lines.

Head reddish grey. Face paler. Palpi pale grey, the terminal joint somewhat ochreous, with a brownish spot on its inner side, before the apex. Antennæ fuscous. Thorax reddish-grey. Abdomen fuscous, with the anal tuft rather ochreous. Legs pale ochreous. Tarsi reddish-grey, with the ends of the joints paler. Anterior wings narrow, reddish-grey, with the shoulder pale, and the costa also paler than the ground colour of the wing; the two black spots are placed obliquely as in *purpurea*, but have not the pale blotch near them; they are followed by two white spots as *purpurea*, but the large black blotch towards the costa of that species is here entirely wanting; cilia reddish-grey, preceded by a row of black dots. Posterior wings griseous, with paler cilia, in which a darker line runs round the margin of the wing.

For this species I am indebted to Mr. Weir, who took two near Lewes, from thatch, in September, 1848; Mr. Maitland has also taken the species at Ventnor.

† Sp. 14. *Capreolella*, Zeller (Isis, 1839, s. 196).

Taken by Zeller in April, in corn fields, and thus briefly described: "little larger than *vaccinella*, with the spots of *applana*, but a brownish-grey clearer ground-colour."

There is a foreign specimen in the British Museum.

Sp. 15. *Hypericella*, Hüb. 441, Tr., D., Z., Lie.
Liturella, Hüb. 83, St.
Liturosa, Haw.

The larva feeds, in June, on *Hypericum perforatum;* the moth appears in July. As yet this is scarce in this country; it is occasionally taken at sugar.

The larva described by Lienig as feeding on sallow probably belongs to the next species.

Sp. 16. *Conterminella*, (F. v. R.) Z. (Isis, 1839, S. 196.)
Curvipunctosa, Haw., St.

Though Haworth's name has priority, yet I give the preference to Zeller's name, as his description of the posterior wings at once identifies the species; Haworth's description might *possibly* apply to a variety of *applana*.

Haworth's variety β, of which Mr. Curtis has a specimen, may prove to be a distinct species. This insect, at first sight, a good deal resembles the preceding; but the posterior wings have no emargination near the anal angle, and the head and thorax are not so bright a yellow as in that species.

The larva feeds on the sallow, and also on the osier (Salix viminalis), from the tops of which plant they have been obtained in May by Mr. Wing, and the moths reared at the end of June.

When beating for *Pœcilochroma piceana* (Haw.) among sallows, in August, I met with some wasted specimens of the perfect insect.

Sp. 17. *Angelicella*, Hüb. 337, Tr., Z., Ev.
Rubidella, D., Hüb. 221?

Readily distinguished from *arenella*, *propinquella*, and other allied species, by its pale unannulated palpi.

This species was taken by Mr. Bond, at Yaxley, in 1845. Mr. Sircom and Mr. Desvignes have each a specimen of their own capturing.

† Sp. 18. *Laterella*, W. V., Z., F. v. R. (Text.)
Heracliella, Hüb. 417, Tr., D. ? F. v. R. (Fig.), Zett.

Zeller states Hübner's *carduella* to be a variety of this species; now in this country *laterella* has not yet occurred, whereas a number of specimens of an insect which agrees well with Hübner's figure of *carduella* have been taken at different times: our *carduella* may not be the *carduella* of Zeller, but is decidedly the *carduella* of Hübner, and I should think a very distinct species.

The larva of *laterella* feeds, according to Tischer (see Treitschke), on *Centaurea cyanus*, in May and June, and the moth appears in July. Tischer adds: "*Carduella* is a variety, since I bred from these larvæ two specimens which perfectly agree with Hübner's figure, N. 439."

This species is not uncommon on the continent, and will probably soon be detected in this country.

Sp. 19. *Carduella*, Hüb. 439., St.

Not a common species, but widely distributed. Most of the specimens that have occurred have been in July and August, and several of them at sugar. Mr. Wing took a specimen at sugar, on the Dartford Heath fence, in September.

Sp. 20. *Characterella*, W. V., Tr., Z., Lie., D., Ev.
Ocellana, F., St.
Signella, Hüb. 80.
Signosa, Haw.

This species frequents sallows, on which the larva feeds in July; the moth appears towards the end of August, and re-appears in the spring. Many of the spring specimens are very fine, and have no appearance of having hybernated; probably some pass the winter in the pupa state.

† Sp. 21. *Ciniflonella*, (Lie.) Z. (Isis, 1846, S. 280.)

"Alis anterioribus rufescenti-canis, griseo-conspersis, postice et in parte costæ basali canis, lineola ante, lineola annuloque minuto post medium disci nigris." Z. l. c.

Taken by Madame Lienig in Livonia.

† Sp. 22. *Thapsiella*, Z. (Isis, 1847, S. 838.)

"Alis anterioribus obtusiusculis, carneo-griseis, fusco-conspersis; costa fusco-maculata, punctis duobus ante, puncto ocellari

post medium nigris; palporum articulus terminalis annulo medio et apice fuscis." Z. l. c.

Taken by Zeller in Sicily; the larvæ abundant on Thapsia garganica; sometimes 50—60 larvæ on one plant. He bred the perfect insect from April 30th to June 4th; but never saw it at large.

Sp. 23. *Yeatiana*, F. 3, 2, 274.
Yeatsii, Haw.
Putridella, Hüb. 244? Haw.

Distinguished from all its congeners by the glossy pale greyish-purple anterior wings; it is more or less dusted with fuscous; and frequently the nervures of the hinder portion of the wing are darker; it then becomes the *putridella* of Haworth; but Hübner's figure of *putridella*, if meant for this species, is very bad.

Taken rather commonly by some of the collectors at the east end of London.

Sp. 24. *Intermediella*, n. sp. (Pl. XVII. fig. 4.)

Alæ anteriores ad apicem *obtusæ, nec rotundatæ;* ochraceæ, plus minusve rufescentes, atomis fuscis conspersis, punctis duobus obliquè positis ante medium, duobus albis pone medium, et suprà ea macula fusca.

This forms a connecting link between the group of which *arenella* may be considered the type and *applana;* the form of the anterior wings is nearly square at the apex, thus very different from *applana;* the ground colour of the anterior wings is ochreous, or reddish ochreous, interspersed with numerous fuscous atoms;—before the middle are two black spots placed obliquely and beyond them two smaller white ones margined with black, and above these is a fuscous blotch; towards the base is the ordinary dark shoulder mark, which reaches about half across the wing.

Expansion of the wings, 9—9½ lines.

Head ochreous. Face paler. Palpi, second joint, pale ochreous above, beneath rather darker, terminal joint pale ochreous, but with the base, a ring before the apex, and the extreme apex, fuscous. Antennæ fuscous. Thorax ochreous or reddish ochreous, according with the colour of the anterior wings. Abdomen pale ochreous. Legs pale ochreous, the anterior rather darker on the outer side. Tarsi ochreous, rather darker than the legs. Anterior wings described above; a little before the hinder margin is an indistinct angulated fascia, which, from not being

dusted with fuscous, appears paler than the rest of the wing; on the hinder margin itself is a row of fuscous spots; cilia of the colour of the wings, frequently more rufescent at the apex. Posterior wings pale griseous, darker at the apex, with pale yellowish-white cilia.

Taken in the summer of 1847, at West Wickham, by Messrs. Bedell and Douglas, who beat it out of old thatch, sparingly.

I should have been inclined to think this the continental *laterella*, were it not that I have before me a specimen of that insect, obtained by Mr. H. Doubleday from the continent, which agrees precisely with Hübner's fig. 417 (*which Zeller says is very good*), and is a very different insect from our species.

Sp. 25. *Applana*, (Pyr.) F., Haw., St., Z.
Applanella, (Tin.) F., F. v. R.
Cicutella, Hüb. 79, 419, Tr., D., Ev.

The most abundant species in the genus; the hybernated specimens are exceedingly abundant in the first warm evenings of spring.

The larva feeds on various umbelliferous plants, Cicuta virosa, Heracleum sphondylium, &c., in May and June.

Sp. 26. *Ciliella*, n. sp. (Pl. XVII. fig. 7.)

Major; alæ anteriores rufæ, maculis duabus albis, nigro-cinctis, obliquè positis ante medium; et maculis duabus albis longitudinaliter positis pone medium; alæ posteriores ciliis rufo-variegatis.

Somewhat resembling *applana*, but much larger; the anterior wings generally more uniform in colour, with four white spots; the two first placed obliquely and preceded by black margins, the two others placed longitudinally; the cilia of the posterior wings, instead of being plain, as in *applana*, are marbled with rufous.

Expansion of the wings, 10—11 lines.

Head dark reddish-brown. Face ochreous grey. Palpi, second joint, reddish-brown; internally pale ochreous; last joint reddish-ochreous, with two dark fuscous rings, one at the base, the other before the apex, extreme apex fuscous. Antennæ reddish-brown. Thorax reddish-brown, more or less dark, according to the colour of the anterior wings. Abdomen grey. Legs externally reddish-brown, internally pale ochreous. Tarsi externally reddish-brown, with the ends of the joints paler, internally ochreous, with the base of the joints darker. Anterior

wings variable in colour, from pale reddish-brown to dark fuscous, with but slight reddish tint; base and basal half of the costa generally paler than the rest of the wings; spots as in *applana*, two black ones placed obliquely before the middle, the posterior one externally margined with white, and beyond them two white ones margined with black, placed longitudinally; on the hinder margin is a row of fuscous spots; cilia rufous-brown. Posterior wings greyish; cilia pale, variegated with rufous towards the end.

This species appears widely distributed: it was beat out of thatch, at West Wickham, in August, 1847, by Messrs. Bedell and Douglas; Mr. H. Doubleday has received it from the Lancashire coast; Mr. Allis meets with it in Yorkshire; and I have a specimen from Stirlingshire.

Sp. 27. *Rotundella*, Douglas, (Zool. 1270, F. 8.)
Pcloritanella, Z. (Isis, 1847, S. 837.)

Taken by Mr. Douglas at Mickleham, and Sanderstead, in September, at sugar.

Zeller met with this insect abundantly in Sicily, on mountains near Messina, in April and July. He says, "the larva feeds probably on *Erica arborea*, or *Spartium junceum*."

† Sp. 28. *Parilella*, (F. v. R.) Tr., Z., Lie.
Humerella, Dup. (Pl. 312, f. 7.)

"Alis anticis testaceo-hepaticis, basi punctoque medio flavidis; posticis cinereis." Tr. l. c.

The lava feeds, according to Lienig, in June, on *Athamanta oreoselinum* and *Selinum carvifolium*. The perfect insect appearing in July. Taken, by Mann, on the trunks of birches.

This and the four following species are distinguished by the pale shoulder of the dark-coloured anterior wings.

† Sp. 29. *Ferulæ*, Z. (Isis, 1847, S. 840.)

"Major, fronte patagiisque flavidis, alis anterioribus obtusis brunneis, basi abrupte flavida, puncto nigro ante, albo post medium; palpis flavidis, externe fuscescentibus, articulus terminalis basi annuloque fuscis." Z. l. c.

Zeller met with the larvæ of this species in Sicily, near Messina, on *Ferula communis*, April 15th, and bred from them five specimens in the middle of May.

† Sp. 30. *Furvella* (Pod.) Tr., Z.

" Capite thoraceque flavis; alis anticis pallide hepaticis, basi punctoque medio flavis." Tr. l. c.

Posterior wings not emarginated at the anal angle (according to Zeller), thus resembling *conterminella*.

Taken in July, in Austria and Hungary; larva unknown.

† Sp. 31. *Cnicella* (Tis.), Tr., F. v. R., Z., D.

" Alis anticis rubro-fuscis vel hepaticis, basi abrupte albido-cinereis, punctis duobus tribusve (rarius uno) disci longitudinaliter positis albis." F. v. R. l. c.

The larva feeds gregariously in May on Eryngium campestre; the perfect insect appears in June.

There are specimens of this in the British Museum.

† Sp. 32. *Hepatariella* (Lien.), Z. (Isis, 1846, S. 282).

" Palporum articulo terminali ad basim griseo, alis anterioribus badiis (fem. basi abrupte dilutiore), fuscencenti-conspersis, puncto uno duobusve disci mediis albis." Z. l. c.

Closely allied to the preceding. Taken by Madame Lienig in Livonia in July.

† Sp. 33. *Impurella* (Mtzn.), Tr., F. v. R., Z.

" Alis anticis fusco-rufis, dense nigro, fusco albidoque pulverulentis; basi, costa, fascia dimidia ante, fasciaque integra post medium albo-conspersis; puncto medio obsoleto nigro-fusco." F. v. R. l. c.

Beat out of pine trees by Mann in May and August.

Sp. 34. *Depressana*, (Pyr.) F., Z.
Depressella, (Tin.) F., Hbn. 407, D.
Bluntii, C.
Collarella, Zett. In. Lapp. 999, 6.

A variable species; distinguished not so much by the markings of the wings, for Hübner's figure shows none, as by the pale colour of the palpi, head, and thorax.

The larva is abundant in gardens near Berlin, on the umbels of the carrot and parsnip.

Sp. 35. *Pimpinellæ*, Z. (Isis, 1839, and Isis, 1846, S. 282.)
Characterosa, Haw.
Pulverella, Ev.?

Var. β? Major, tarsis omnibus externè rufescentibus.

Allied to the preceding, but larger; the costa broadly red, generally some black spots on the disk, and the underside of the second joint of the palpi is reddish-brown, (in *depressana* it is very pale yellow).

The larvæ is, according to Zeller, abundant near Glogau on *Pimpinella saxifraga*, in August and September.

The perfect insect was taken by Mr. Bedell in September from some old thatch, near the Stoat's Nest Station of the Brighton Railway.

I have only seen one specimen of var. β, which may hereafter prove distinct.

Sp. 36. *Albipunctella*, Hbn. 149, St., Tr., Z., D., Ev.
Albipuncta, Haw.

Thorax reddish-brown; last joint of the palpi entirely dark fuscous, except the extreme apex, which is whitish.

The larva feeds, according to Treitschke, in May, on Artemisiæ campestris. I have often taken the perfect insect at sugar in July and August.

Sp. 37. *Pulcherrimella*, n. sp. (Pl. XVII. fig. 8).

Alæ anteriores rufæ, numerosis striis atris, striâ obliquâ atrâ ante, puncto albo pone medium; caput thoraxque pallida; palporum articulus terminalis intus pallidus, puncto fusco basi, alteroque ante apicem; articulus secundus infrà rufo-brunneus.

Allied to *albipunctella*, but the head and thorax are pale; the inner side of the palpi is pale, with a dark spot at the base, and another before the apex; the pale hinder fascia on the anterior wings is more angulated; and the black streaks on the disk are always more distinct than in *albipunctella*. In some specimens, after the black spot, is a white streak, reaching nearly to the white spot.

Expansion of the wings $6\frac{1}{2}$—7 lines.

Head pale ochreous-grey. Face pale ochreous-grey. Palpi; the second joint pale ochreous-grey above, beneath reddish-brown; terminal joint externally dark fuscous, except the apex,

internally pale ochreous, with a dark spot at the base, and another before the apex. Antennæ fuscous. Thorax pale ochreous-grey, with the sides reddish-brown. Abdomen greyish, the anal tuft ochreous. Legs, internally greyish-ochreous, externally reddish-brown. Tarsi internally ochreous, with the bases of the joints darker; externally reddish-brown, with the ends of the joints paler. Anterior wings reddish-brown, with a very pale dash at the base of the inner margin; scattered over the disk are numerous black scales, which frequently form short streaks; before the middle is a short oblique black streak, sometimes followed by a straight white one; beyond the middle of the wing is a distinct white spot as in *albipunctella;* and between this and the hinder margin is a pale angulated fascia; at the hinder margin is a row of fuscous spots; cilia pale reddish-brown. Posterior wings pale grey, with paler cilia.

This species is taken not very uncommonly at Sanderstead Downs, in July, being beat out of the juniper bushes, which form a sort of universal shelter for all the minute *Lepidoptera* that occur on the Downs.

The larva most probably feeds on some umbelliferous plant.

Sp. 38. *Douglasella*, n. sp.

Alæ anticæ sordidæ brunneæ, numerosis atomis albis irroratæ; obtusæ; caput thoraxque albida; palporum articulus secundus infrà griseus.

Closely allied to the preceding; but the anterior wings are less pointed at the apex; the head and thorax are greyish-white (nearly white), with no admixture of ochreous; the second joint of the palpi is underneath grey, not reddish-brown; and the tarsi are externally dark fuscous, with no admixture of reddish; the ends of the joints paler, as in *pulcherrimella;* the colour of the anterior wings is much darker, more fuscous than in *pulcherrimella*, and with more numerous white atoms.

Mr. Weir took a specimen of this in the south of England, and Mr. Maitland has likewise taken it.

Sp. 39. *Weirella*, n. sp. (Pl. XVII. fig. 5.)

Alæ anteriores rufo-brunneæ, puncto fusco albido-cincto paullulum ante medium, punctis duobus parvis fuscis ab atomo albo separatis, pone medium; palporum articulus terminalis pallidè ochraceus, annulo fusco ante apicem.

Larger than the two last; allied to *albipunctella*, but *without the*

white spot on the anterior wings, in place of which two very small, pale fuscous spots are visible; the pale fascia is more angulated, resembling that of *pulcherrimella;* the row of black spots is less distinct than in *albipunctella;* posterior wings paler.

Expansion of the wings $7\frac{1}{2}$ lines.

Head greyish-brown. Face rather paler. Palpi; second joint pale ochreous above, greyish-brown beneath; terminal joint *pale ochreous*, with a *single* fuscous ring before the apex. Antennæ fuscous. Thorax greyish-brown; the sides dark reddish-brown. Abdomen greyish, with the anal tuft ochreous. Legs externally reddish-brown, internally pale ochreous. Tarsi dark fuscous, with the ends of the joints paler. Anterior wings dark reddish-brown; a little before the middle is a fuscous spot surrounded by whitish; and a little beyond the middle are two small fuscous spots separated by a white atom; before the hinder margin is a very faint, pale angulated fascia; and on the hinder margin are a few fuscous spots; cilia pale reddish-brown. Posterior wings whitish-grey, with paler cilia.

Mr. Weir has two specimens, taken in Sussex, probably at sugar, near Brighton.

Sp. 40. *Chærophylli*, Z. (Isis, 1839, S. 196.)
Badia, Haw.
Badiella, St.
Heracleana, F.?

Zeller states that he has bred this insect in plenty from larvæ found on *Chærophyllum bulbosum*. I have taken several of this in July and August at sugar.

Its larger size, and the ochreous basal patch on the costa, readily distinguish it from the following.

Sp. 41. *Ultimella*, n. sp. (Pl. XVII. fig. 6.)

Alæ anticæ angustæ, striis numerosis atris, posteriorè fasciâ pallidâ acutè angulatâ; punctis duobus albis fusco-cinctis in medio.

Allied to *chærophylli*, but smaller, and the pale fascia more angulated; also destitute of the ochreous shoulder of *chærophylli*, with the central portion of the wing marked as in *nervosa*, from which species this is distinguished by its size, and much narrower anterior wings.

Expansion of the wings $7\frac{1}{2}$ lines.

Head reddish-ochreous. Face pale ochreous. Palpi, second joint, pale ochreous above, beneath reddish-brown; terminal joint pale ochreous internally, with a dark fuscous spot before the apex, externally rather dark, with the dark spot before the apex, the apex itself pale. Antennæ fuscous. Thorax pale reddish-ochreous. Abdomen griseous, anal tuft pale ochreous. Legs pale ochreous internally, externally darker. Tarsi pale ochreous internally, externally reddish-brown, with the ends of the joints paler. Anterior wings dull reddish-brown, with numerous short longitudinal black streaks, which are thickest on the costal half of the wing; a little before the hinder margin these form the outer edge of an extremely angulated fascia, beyond which the apical portion of the wing is entirely fuscous; a little before the middle of the wing is a black spot margined with whitish, and immediately beyond it is another likewise margined with whitish; cilia pale reddish-brown. Posterior wings grey, with paler cilia.

Taken by Mr. Weir near Lewes, in September, 1848, by beating thatch.

This may perhaps be the *apiosa* of Haworth. I know no other that will at all answer his description of "puncto exactè in medio, minutissimo, niveo, fusco-cincto."

Sp. 42. *Nervosa*, Haw., St.
Daucella, Z. (Isis, 1839, S. 196), Tr.? W. V.?

Recognized at once by the extremely angulated fascia of the anterior wings, and its concolorous glossy appearance.

Taken in plenty by Mr. Weir this autumn from thatch, in the neighbourhood of Lewes: Mr. E. Shepherd also took the insect at Weybridge.

This must be the *daucella* of Zeller, from the character of the fascia, yet he gives *apiella*, Hübner, as a synonyme, which is a much darker insect, and appears to me identical with *badiella*.

† Sp. 43. *Emeritella*, Heyden, (Mann's Cat.)

This very distinct species has not yet, I believe, been described. It has some resemblance to *albipunctella*, but is much larger, and the head, palpi, and centre of the thorax, are bright ochreous yellow.

There are specimens of it in the British Museum.

Sp. 44. *Badiella*, Hbn. 92, Tr., Z., Ev.
Apicella, St.
Apiella, Hüb. 94?
Pastinacella, Dup. pl. 291, f. 5 (not 4).

Var. β. Palporum articulo secundo infra ochraceo, nec fusco.

Not uncommon among the juniper bushes near Sandersted in August.

Of var. β I have a specimen; and Mr. Bedell has another, taken at the same time and place with the ordinary variety.

Sp. 45. *Pastinacella*, Dup. XI. 153, pl. 291, f. 4 (not 5).

Variable in shade of colour, generally grey; sometimes almost as dark as the preceding; but the anterior wings are narrower. In the middle of the wing are two ocellated markings, much more distinct than in *nervosa*.

Duponchel's figure has a reddish tinge, which I have not observed in any of the specimens I have seen. I have no doubt that this was the species sent by Fischer to Duponchel, his observation, quoted by the latter, being so very applicable:—"This was taken at first for a pale variety of *badiella* of Hübner; but M. Zeller has reared several hundred specimens from the larva which feeds on *Pastinaca sativa*, and has not obtained a single one as dark as that figured by Hübner, and which we take sparingly here and there."

Though Duponchel was thus aware that this insect was very like *badiella*, with which insect he was not acquainted, yet he did not hesitate to figure as the other sex of *pastinacella*, a specimen which he had obtained from the Department du Nord, which differs considerably from his other figure, and which I have no hesitation in pronouncing a veritable *badiella*.

† Sp. 46. *Veneficella*, Z. (Isis, 1847, S. 842.)

"Major, alis anterioribus elongatis, rotundatis, brunneo-griseis, linea disci fusca longitudinali, partim pallido-squamata, lineolis ante apicem fuscis; abdomine ciliato, palporum articuli terminalis basi annuloque fuscis." Z. l. c.

Taken by Zeller near Syracuse; the larvæ plentiful in April and May on Thapsia garganica. His specimens emerged from the pupa from the 20th of May to the 5th of June. He found only one specimen of the perfect insect at large.

Sp. 47. *Heracleana*, De Geer, II. 1, 294, Z., St.
Heraclei, Haw.
Umbellana, F.

A common species; the larva plentiful in June and July on Heracleum sphondylium, from which I have myself bred it.

Linnæus appears to have had a confused notion of his *heracleana*, since he says in the Fauna Suecica:—"Hujus plures species apud nos sunt, quæ magnitudine differunt, sed notis specificis non facile distinguuntur." The *heracleana* of the Linnæan Cabinet is, as observed by Haworth, a specimen of *applana*.

† Sp. 48. *Dictamnella*, F. v. R., Tr., Z., D.

The largest species of the genus, and most distinct. It occurs in Hungary, and the larva feeds on Dictamnus albus in June.

Supplemental Note.—I have now concluded the enumeration of the species which are known and described by recent authors, and will now just refer to two species, which appear to have escaped the observation of the present generation of collectors. In the first place, there is the *rutana* of Fabricius, which is evidently a *Depressaria*. "Alæ depressæ fuscæ, lineolis abbreviatis, numerosissimis, tenuissimis, transversis, albis. Præterea puncto duo parva, elevata, approximata, atra in medio." F. 3, 2, 287. "Habitat in Galliæ Ruta, cujus folia contorquet." And secondly, the *zephyrella* of Hübner (not of Stephens), whose figure is copied by Wood, No. 1193. Treitschke gives this as a synonyme of *his zephyrella*, which Zeller unhesitatingly gives as a synonyme of *terrella*, but has not given *zephyrella*, Hübner, as a synonyme, nor given any reason for omitting it. Hübner's figure resembles no *Gelechia* that I know, and has much more the appearance of a *Depressaria*.

The *Hæmylis Lefebvriella* of Duponchel, pl. 290, fig. 11, is not a *Depressaria;* it is the *Rœslerstammia Heleniella* of Zeller, the *Acrolepia autumnitella* of Curtis, and the *Tortrix* (*Eupœcilia*, St.) *pygmæana* of Haworth and Stephens.

As so many of our entomologists are in possession of Wood's Index Entomologicus, the figures in which are mostly very good (but from the defective nomenclature, the work has now become

comparatively useless), I here give the true names of the insects of this group figured in Wood's Plate 38:—

No. 1162.....*Sparganiellus* (good).
1163.....*Heracleana* (too grey).
1164.....*ulicetella* (good).
1165.....*ulicetella* (not good).
1166.....*nervosa* (not good).
1167.....*nervosa* (good).
1168.....*badiella* (good).
1169.....*chærophylli* (good).
1170.....*carduella* (middling).
1171.....*arenella* (paler than ordinary specimens).
1172.....*liturella* (good).
1173.....*costosa* (not good).
1174.....*arenella* (var.)
1175.....*characterella* (good).
1176.....
1177..... } *applana* (good).
1178.....
1179.....*Alstrœmeriana* (good).
1180.....*ultimella?* (not bad).
1181.....A *Peronea*.
1182.....*costosa* (good).
1183.....*assimilella* (good).
1184.....*Hypericella* (good).
1185.....*depressana* (good).
1186.....*purpurea* (not very good).

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XXXIV. *On the British Species of the Genus* Gelechia *of Zeller. By* J. W. Douglas, Esq.

[Read December 4th, 1848.]

For many years the *Micro-lepidoptera* of Britain have been greatly neglected, and a great confusion of names has arisen. Since the publication of the works of Haworth and Stephens there has been no systematic attempt to identify either our named or unnamed species with those known on the continent, notwithstanding that, in the Isis of 1839, Zeller has described and enumerated a great number. I have been requested to bear a part in helping to elucidate "this Babel called Micro-lepidopterology," as M. Guénée says; and if occasionally I should wander from the right path in the mazes of synonymy, it will be more from the difficulty of seeing my way, than from want of endeavour to find it.

The genus *Gelechia* of Zeller is about equivalent to *Lita* of Treitschke, and includes the greater part of the genus *Anacampsis* of Curtis, and the whole or portions of the genera *Recurvaria*, *Che-*

laria, Cleodora, Acompsia, Enicostoma, Telea, Glyphipteryx, Pancalia, Harpagus, &c. of British authors. It is a large genus, bringing together many allied species, which in our catalogues are mixed with others not nearly related, and placed in several genera; it is on this account, and because the clearing up of the synonymy of species, rather than the examination of genera, is the object now before me, that I have adopted it. I admit that it is capable of subdivision; but, when our species are clearly made out, it will be time enough to consider genera more particularly.

I propose to take the species without reference to the sections into which Zeller has divided the genus, because, while I can at once proceed with some about which no doubts exist, I cannot be so sure about others without comparison with foreign specimens, and it may be some considerable time ere an opportunity of making that arrives. At the end, I will give a synopsis of the species, arranged according to their affinities.

Gelechia, Zeller.

"*Head* smooth; *palpi* at least as long as the thorax, recurved, compressed, with a long thin and pointed terminal joint; *tongue* moderately long. Attitude of the wings as in *Depressaria; anterior* longish, *posterior* trapezoidal, with long or moderately long cilia."

A The last joint of the palpi fine, thin and pointed.
  a The posterior wings broader than the anterior wings, or at least as broad.
    α The last joint of the palpi longer than the penultimate.—*Nothris*, Hüb.
    β The last joint of the palpi shorter than the penultimate.—*Gelechia*, Hüb.
  b The posterior wings narrower than the anterior.—*Brachmia*, Hüb.
B The last joint of the palpi with a beard on the back, as it were compressed and widened.
    α The posterior wings broader than the anterior.—*Chelaria*, Haw.
    β The posterior wings narrower than the anterior.—*Metzneria*, Zckn.

Sp. 1. *Populella.*
G. Populella, Z.
Ti. Populella, L.
Lita. Populella, F. v. R. pl. 76 and 77, f. 1.
Anac. Populella, St. (Cat.)
Re. Populi, Haw.
An. laticinctella, St. (Ill.), Wood, 1188.
Ti. Blattariella, H. 148.
Re. Juniperi, Haw.
An. Juniperella, St., Wood, 1187 (non L.)
An. hortuella, St. (non Wood.)

Tinea Juniperella of Linné is erroneously given as British. Haworth quotes it, and says it is found on poplars; but F. v. R. has reared it from junipers, and figures its preparatory states. Zeller places it in his genus *Ypsolophus* near to *fasciellus*, H. (*Macrochila fasciella*, St., Wood, 1245.)

Sp. 2. *Lobella.*
G. lobella, Z.
Ti. lobella, W. V., H. 238, Tr.
Py. Thunbergana, Fab.
En. Thunbergana, St., Wood, 1250.
Re. Thunbergii, Haw.

Sp. 3. *Cinerella.*
G. cinerella, Z.
Ti. cinerella, L., Tr., H. 173.
Re. cinerea, Haw.
Acompsia cinerella, St., Wood, 1242.

Sp. 4. *Malvella.*
G. Malvella, Z., F. v. R. pl. 1, f. 46.
Ti. Malvella, H. 281.
T. Listerella, L.?
An. Listerella, St. (Ill.)
Re. lutarea, Haw. p. 549, No. 10.

Of this species, Hübner's figure is not good, as stated by Zeller, but it is well figured by F. v. R., and said by him to feed on Althæa rosea (Hollyhock.) It may be the *Listerella* of Linné, but his description is not sufficiently definite to determine.

Sp. 5. *Gallinella.*
G. gallinella, *Z.*
Lita. gallinella, Tischer, Tr., Dup. 296, f. 9.
Re. Betulea, Haw. (non *T. Betulinella*, H.)
An. Betulea, St., Wood, 1192.
An. lanceolella, St., Wood, 1210.

Sp. 6. *Leucatella.*
G. leucatella, Z.
Ti. leucatella, L., H. 146.
Erm. leucatea, Haw.
Telea leucatella, St., Wood, 1290.
Lita. albo-cingulella, Dup. 298, fig. 13.

Sp. 7. *Triparella.*
G. triparella, Mtzn., Z., Dup.
Re. dodecca, Haw.
An. dodecella, St., Wood, 1200 (non L.)
Ti. paripunctella, Thunb.?

Sp. 8. *Dodecella.*
G. dodecella, Z. (Isis, 1839, p. 335.)
Ti. dodecella, L.
G. favillaticella, Z. (Isis, 1839, p. 201.)
An. aspera, Wood, 1202.
An. annulicornis, St., Wood, 1199.
An. Pinetella, Bentley (MS.)

The *larva*, according to Madame Lienig, feeds till the middle of May in the small, not full-grown, shoots, of the Pinus Abies. (Isis, 1846.)

Sp. 9. *Mouffettella.*
G. Mouffettella, Z. (Isis, 1846.)
Ti. Mouffettella, L.? H. 245.
An. Mouffettella, St., Wood, 1201.
G. pedisequella, Z. (Isis, 1839) non H. 95.

The *larva*, according to Madame Lienig, feeds during May, on honeysuckle, where it inhabits a tubular closely-fitting web between united leaves. The insect lies nearly four weeks in

pupa, and appears from the middle of June to far in July. (Isis, 1846.)

Sp. 10. *Terrella.*
G. terrella, Z.
Ti. terrella, W. V., H. 170.
L. terrella, F. v. R. pl. 80, f. 1 and pl. 96.
Ti. pauperella, H. (Cat.)
Re. subcinerea, Haw.?
Re. Listeri, Haw.
An. lutarea, St., Wood, 1197.
An. subcinerea, St., Wood, 1196.
An. cinerella, St., Wood, 1195.

Sp. 11. *Aleella.*
G. aleella, Z.
Ti. aleella, Fab.
Ti. alternella, H. 151.
Re. alterna, Haw.
An. alternella, St., Wood, 1229.
Yp. bicolorella, Tr.
L. bicolorella, Dup.

Sp. 12. *Nanella.*
G. nanella, Z.
Ti. nanella, W. V., H. 264.
Re. nana, var. β, Haw.
An. sequax, St.? Wood, 1213.
An. Padifoliella, Westw. (non H.)

Sp. 13. *Luculella.*
G. luculella, Z.
Ti. luculella, H. 397.
Re. subrosea, Haw.
An. subrosea, St.
An. luctuella, St., Wood, 1206 (non H.)
An. marmorea, Wood, 1218.

Sp. 14. *Scriptella.*
G. scriptella, Z.
Ti. scriptella, H. 152, Tr.
Re. Blattariæ, Haw.
An. Tremella, St., Wood, 1123 (non W. V.)

Sp. 15. *Vulgella.*
G. vulgella, Z.
Ti. vulgella, H. 346, W. V.?
Re. aspera, Haw.
An. aspera, St.
An. subrosea, Wood, 1219.

Sp. 16. *Longicornis.*
An. longicornis, Curt. 4, pl. 189, St., Wood, 1198.
G. histrionella, Z.
Ti. histrionella, H. 464.
L. zebrella, Tisch., Tr.

Sp. 17. *Ericinella.*
G. Ericinella, Z.
Ti. micella, H. 210, Tr.
Panc. Merianella, St., Wood, 1385 (non L.)

Sp. 18. *Hermannella.*
G. Hermannella, Z.
Ti. Hermannella, Fab., Tr.
Ti. Zinckenella, H. 401, 402.
Glyph. Zinckella, St., Wood, 1372.
Glyph. Schæfferella, St., Wood, 1373.

Sp. 19. *Conscriptella.*
G. conscriptella, Z.
Ti. conscriptella, H. 283.
Chel. conscripta, Haw.
Chel. rhomboidella, St., Wood, 1235 (non L.)

Sp. 20. *Sororculella.*
G. sororculella, Z.
Ti. sororculella, H. 440.
An. Ericæ, Westw., Humph. B. Moths, pl. 104, f. 13.

Expansion of wings 7 to 8 lines. *Head* grey-brown; *anteunæ* brown-black; *thorax* red-brown; *anterior wings* shining, red-brown, lighter on the inner margin: in the centre is a strong black streak placed longitudinally; in which, just before the middle of the wing, is a white spot having a black dot in the centre, and the end of the streak is as it were cut off by a white mark, so that a black spot appears beyond a white one. Below the central white spot,

in the groove of the wing, is a thin black streak having white intervals. Beyond the middle is an acutely-angled buff fascia, from the costal end of which round the posterior margin to the anal angle are seven or eight long black dots, placed on a buff ground: cilia grey-brown. *Posterior wings* silver-grey, cilia concolorous. *Body* griseous.

This moth sometimes varies in having on the anterior wings more small black streaks than those I have mentioned. I bred two on the 28th June, 1848, from larva found in leaves of sallows, and took two on 11th July in the evening flying about sallows at Dulwich wood. It is also in the Bentley cabinet, taken, Mr. Westwood says, in the north of England.

XXXV. *Descriptions of some new Species of* Coleoptera. *By* J. F. S. Parry, Esq., F.L.S., &c.

[Read 5th February, 1849.]

Family LEBIADÆ.

Genus Physodera, Eschscholtz.

Physodera Eschscholtzii.

(Plate XVIII. fig. 2.)

Phys. niger, nitidus, cæruleo-tinctus; thorace cyaneo; elytris splendide cupreis, marginibus viridi-cæruleis.

Long. corp. $3\frac{2}{3}$ lin.; lat. $1\frac{3}{4}$ lin.

Inhabits Ceylon and the Philippine Islands.

Although the present insect wants the bladder-like swelling on either side of the thorax, which characterizes the species on which Eschscholtz founds his genus *Physodera*, it nevertheless agrees so closely with that insect in all other particulars, that I do not hesitate to place it in the same genus. One is naturally led to question whether the swellings on the thorax may not be a sexual distinction, but on this point I have not been able to satisfy myself. Both species, viz. the *P. Dejeanii* and the *P. Eschscholtzii*, were brought by Mr. Cuming from the Philippine Islands,* and are now deposited in the collection of the British Museum; and, upon

* My own specimen of the *P. Eschscholtzii* is from Ceylon.

comparing these together, I can only perceive differences in the feet, palpi, &c., which appear rather to be specific than sexual. The *P. Eschscholtzii* is a larger insect than *P. Dejeanii*, its legs and antennæ are relatively rather longer and more slender, the elytra are larger in proportion and more elongated, and the punctures of the striæ are a trifle more distinct; the thorax moreover is less distinctly punctured on the hinder part. The eyes are very prominent, and there is a mesial fovea on the forehead, and an irregular depression on either side near the insertion of the antennæ. The thorax is broader than long, and rather suddenly dilated in the middle; the anterior angles are produced and obtuse, the posterior angles produced laterally, and acute; the lateral margins somewhat reflected, and the reflected portion very broad; the disc convex, and with a deep mesial groove, terminating posteriorly in a fovea, and there are two largish shallow fovea behind, one near each angle, in which are some scattered punctures, as there are likewise near the anterior angles of the thorax: the posterior margin is produced in the middle, in the form of a large, and nearly semicircular lobe. The scutellum is minute and pointed. The elytra are moderately convex, and have a narrow reflected margin: they are rather delicately punctate-striated; of a brilliant copper colour, with green-blue margin. The thorax is steel blue, and the remaining parts are black, with a faint blue tinge. The whole insect is exceedingly glossy.

Genus Physocrotaphus.

A new genus belonging to the section of *Truncatipennes*, and allied to *Cymindis*, distinguished by a large head, swollen behind the eyes, combined with long and somewhat slender antennæ, elongated palpi and jaws (the former with the terminal joint by no means securiform), and simple tarsi and claws.

Physocrotaphus Ceylonicus, ♂. (Plate XVIII. fig. 1).

Phys. niger, nitidus, antennis pedibusque piceo-testaceis, thorace cordiformi, postice truncato, foveis duabus impresso, marginibus lateralibus reflexis. Elytris striatis, striis leviter punctatis, interstiis punctulatis.

Long. corp. 7 lin.

Habitat Ceylon.

The above described species appearing to me to bear much resemblance to an insect described (from Mr. Melly's collection) by Mr. Westwood in the fourth volume of our Transactions, I

forwarded it to that gentleman, and through his kindness I am enabled to furnish the following particulars relating to the two insects. Although closely allied to the *Helluodes Taprobanæ*, the *Physocrotaphus Ceylonicus* differs both generically and specifically. The general form of the body, large simple mandibles, palpi and maxillæ, flattened head and prothorax, and even the striation and punctation of the elytra, agree with Mr. Melly's insect; the head, however, is not of that disproportionate size, and it wants the two elevated tubercules between the eyes, which are replaced by two oval impressions; the upper lip has the anterior angles acute, and the basal joint of the antennæ is elongate: but the chief character in which it differs from *Helluodes* consists in the form of the lower lip, the mentum having the central lobe acutely bifid, whilst the labium is short, transversely truncate at the tip, with long setæ, and with very distinct lateral paraglossæ. This is the more remarkable, because it has the long naked labrum of *Helluodes* (vol. iv. pl. 21, fig. Ba‡), which mainly gives that insect a relation with *Helluo*, whilst the structure of the mentum and labium above described agrees with that of the *Feroniides;* still the anterior tarsi, which, although not dilated, are strongly setose on the under side (indicating this specimen to be a male), and the regularly truncate elytra, show an affinity to the *Truncatipennes*, and render the genera *Helluodes* and *Physocrotaphus* two of the most interesting of Carabideous insects.

Div. TRICHIADÆ.

Genus Fam. Trichius, Fab.

Sub-genus, Dialithus, (Parry).

Sp. 1. *Trichius* (*Dialithus magnificus* ♀.) (Plate XVIII. fig. 4.)

Niger, nitidus, clypeo bifido, thoracisque vittis, elytrorum pygidiique maculis, argenteo-opalinis, femoribus anterioribus rufis.

Long. corp. lin. 9; lat. corp. lin. 4.

This is one of the most magnificent species of the group of *Melitophila* belonging to the genus *Trichius*.

With most of the essential characters of the species of *Trichius*, this beautiful insect presents certain peculiarities which have induced me to institute the new section, to which I have given the name *Dialithus*, for its reception. Compared with the typical species of *Trichius*, the most striking points of distinction in the *Dialithus magnificus* are the deeply cleft clypeus, the great length and slenderness of the tarsi, and the brilliancy of its colouring.

The specimen described is a female, having the anterior tibiæ bidentate, and is from the upper province of Mexico. A second specimen is in the collection of the British Museum, and this collection, like my own, is indebted to Mr. W. Wilson Saunders for this valuable addition.

Sp. 2. *Macronota alboguttata.* (Plate XVIII. fig. 3.)

Nigra, nitida, supra et subtus albo-maculata, capite thoraceque crebre punctulatis, hoc vitta mediana illo vittis duabus, elytris maculis quatuor, pygidio macula centralis albis.

Long. lin. 3.

Habitat India.

This species belongs to the group of *Macronota*, which has a longitudinal excavation on the thorax and scutellum, and to which Dr. Burmeister restricts the generic name of *Macronota;* and together with *M. Diardi*, *M. trisulcata*, *M. dives*, forming part of his first division, although published in the catalogue of *Cetoniadæ* of the collection in the British Museum, under the name of *alboguttata*, it has hitherto remained undescribed. It has also been received from the Philippine Islands.

Sp. 3. *Pachyteria bicolor*, Dej. (Plate XVIII. fig. 5.)

Nigra elytrorum dimidia anterior, antennarum articulis septem primis, tibiis anterioribus tarsisque flavis, elytrorum dimidio posteriore obscure viridi nitido.

Long. $1\frac{1}{2}$ inch.

Habitat Java.

This beautiful insect is one of the numerous undescribed species to be found in the catalogue of the late Count De Jean's collection, and having been assured by a letter lately received from my friend Dr. Schaum, from Paris, of the identity of the species, I have thought it not unworthy of a place in our Transactions.

Fam. BRENTHIDES, Schö.

Cyphagogus Westwoodii.* (Plate XVIII. fig. 9.)

Cyph. niger; nitidus, elytris crenato-striatis; femoribus incrassatis, in medio inciso constrictis.

Long. corp. 4 lin.

Hab. Ceylon.

Head a trifle shorter than the thorax, and varying but little in

* From κυφὸς, a kind of collar; and ἄγω, break, cut asunder, &c., in allusion to the peculiar form of the prothorax.

width throughout; it is about equally broad at the distal extremity and in the region of the eyes, slightly contracted in the space between the antennæ and the eyes, and more distinctly contracted behind: the eyes of moderate size, but little convex, round, and placed nearly midway between the opposite extremities of the head. On the fore part of the head is a faint longitudinal groove, and there are some fine punctures scattered on this part: the hinder part of the head is smooth.

Thorax distinctly longer than broad; about one-third shorter than the elytra, but equalling the body in width. The posterior half of this segment is nearly cylindrical, and exhibits a few indistinct longitudinal rugæ, and some scattered punctures on the upper surface. The fore half of the thorax is compressed, so that the dorsal surface presents an obtuse keel, and on this keel are two transverse indentations, as well as a longitudinal groove. The hinder part of the keel is most raised, and forms a hump.

Body nearly cylindrical, but the elytra are slightly depressed on the fore part: they are crenato-striated. Near the apex of the elytra the suture is raised.

Femora and tibiæ deep and compressed; the hinder femora long and stout, and swollen in the middle (vide wood-cut); the tibiæ equal in length to the femora, equally stout, and most broad at the distal extremity. The hinder tarsi are likewise very stout.

The antennæ are equal to the thorax in length, moderately thick at the base, and becoming gradually broader to the apex: the nine basal joints are nearly spherical; the three terminal joints are distinctly larger than the rest and somewhat compressed; two of them present a nearly square outline, whilst the last joint is longer than broad and somewhat pointed.

This insect approaches to the species of *Taphroderes* in many of its characters, but differs in having the head much broader in front of the eyes, and more especially in the elongated form of the hinder femora. On account of these differences, I have described it under a new generic title; and I may here observe, that the insect described by Mr. Westwood under the name *Taphroderes Whitei*, possessing all the essential characters of the *Cyphagogus Westwoodii*, should be arranged under the same sectional name. The former insect differs from the *C. Westwoodii* in having the thorax distinctly punctured, and in wanting the constriction in the middle of the hinder femora; it is moreover much smaller, and has the tip of the rostrum, as well as the legs and antennæ, pitchy red, whereas in the *C. Westwoodii* all these parts are black.

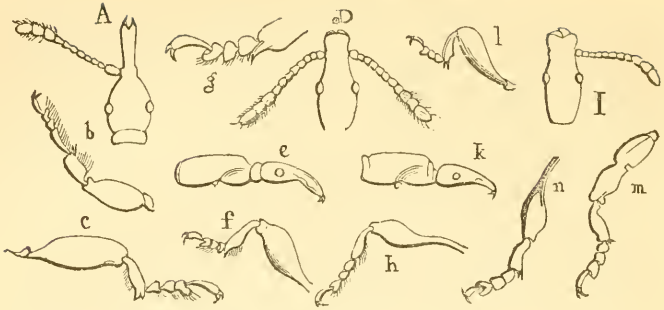

Fig. A, b, c. Details of *Taphroderes* 4-*signatus* ♀.*
A, head seen from above; b, fore leg; c, hind leg.
D, e, f, g, h. Details of *Taphroderes Whitei*, ♂.
D, head; e, head and prothorax seen sideways.
f, fore leg; g, fore tarsus; h, hind leg.
I, k, l, m, n. Details of *Taphroderes Westwoodii*, ♂.
I, head; k, head and prothorax seen sideways.
l, fore leg; m, hind leg seen sideways; n, ditto seen more obliquely.

Cerambyx Gracilipes. (Plate XVIII. fig. 6.)

This insect, it appears to me, belongs to the same great division of the Longicorns as the genera *Aromia*, *Calichroma* and their allies. In having the hinder tibia slender and compressed, and especially in having the first joint of the hinder tarsus elongated and much compressed, combined with a thorax destitute of lateral spines, it approaches most nearly to *Chrysoprasis* and *Promeces*. With the latter it further agrees in having the antennæ incrassated at the apex; the femora, however, are not clavate as in the species of *Promeces*, the elytra are much shorter and broader, and the basal joint of the posterior tarsus is distinctly longer than in either of the genera mentioned.

Ceramb. niger, thorace rugulis transversis, ad latera puncto albo, postice punctis tribus albis, notato; scutello albo; elytris singulis in medio fascia obliqua interrupta, notaque transversa ad apicem, albis ornatis.

Long. corp. 9 lin. Hab. Ceylon.

The head is rugose, and longitudinally grooved between the eyes. The thorax is subconical, becoming gradually broader towards the hinder part, and presents numerous transverse waved

* [The insect here represented agrees with the female of a singular new species of *Taphroderes* from Port Natal, to which I have given the name of *T. distortus*, on account of the singular formation of the mandibles of the male, that on the right hand side being small, whilst the left hand one is as long as the head, and very irregular in form. Had the males only been known, it would have been supposed necessary to form a new subgenus for its reception. The female, however, proves it to belong to the genus *Taphroderes*, and I have but little doubt that when the females of *T. Whitei* and *Cyphagogus Westwoodii* are known, they wil prove to be genuine *Taphroderes*. J. O. W.]

rugæ on the dorsal surface and sides; on each side is a small white spot near the middle, and there is a central white spot on the hinder margin, and a transverse white line on either side. The scutellum is white. The elytra are not quite three times the length of the thorax, broadest at the base, and about one-fourth narrower at the opposite extremity, which is armed with two small spines, one being on the inner margin, and the other separated from this but by a narrowish space. An oblique ridge passes backward from the humeral angle of each elytron, and almost reaches the apex, running obliquely inwards in its course; the space between the ridge and the suture is flat, or very slightly concave. At the base, the elytra are rugose; and, beyond, they are rather finely punctured. In the middle of each elytron is an obliquely-transverse white band (descending as it passes from the suture outwards), which is interrupted in the middle; and very near the apex is a transverse white spot. The antennæ are rather longer than the body, including head and thorax; and so are the slender hind legs.

Length, 8 lin.; width, at base of elytra, 2 lin.

Fam. LAMIADÆ. (Plate XVIII. fig. 8.)

Lamia ænea. (Parry).

Lamia nigra; elytris æneis, nitidis, punctato-striatis; articulis antennarum ad basin cinerascentibus.

Long. corp. lin. 14. Habitat Guinea.

A new species of *Lamia*, belonging to the genus of *Monohammus*, of Meguli; it is from the environs of Cape Coast Castle. For this and the following species I am indebted to my friend, F. Swanzy, Esq., a resident in that country. The principal feature in this species is the dingy brass colouring of the elytra.

Gen. Mastigocera, Dej.

Mastigocera barbicornis, Fab. (Plate XVIII. fig. 7.)

M. Thorace spinoso, elytrisque fusco nigroque variis, albo maculatis, articulo tertio fascicula pilorum.

Long. 13 lin. Habitat Guinea.

The description by Fabricius corresponds so exactly with the insect received by me from the same locality, that I have no hesitation in presenting it to your notice as such. Although previously described, yet, being a very rare and beautiful insect, a figure of it must prove acceptable to the collector of foreign *Coleoptera*.

XXXVI. *Notice of some Hemipterous Insects from Boutan (East Indies), with Descriptions of the new Species.* By W. S. Dallas, Esq., F.L.S.

[Read February 5th, 1849.]

Having been kindly permitted by Dr. Horsfield to examine the *Hemiptera* belonging to the museum of the East India Company, I have now the pleasure to lay before the Society a note of those species of *Scutelleridæ* and *Pentatomidæ* contained in a small collection of Hemipterous insects from Boutan. I have thought it better to give a list of all the species in this collection, as Boutan (or Bhotan) is a district in the extreme north of India, almost entirely surrounded by hills, and from this isolated position its Fauna becomes interesting. A good many of the species have been originally described from Javanese specimens.

Fam. SCUTELLERIDÆ.

Of the *Scutelleridæ* we have the Australian and Javanese *Tectocoris Banksii*, Don.; *Pœcilocoris Drurœi*, Lin.; *P. Childreni*, White, and *P. Hardwickii*, Hope. Of one of the species of *Pœcilocoris* the collection contains the larvæ, apparently in the last state, with a memorandum attached, to the effect that the insect is "said to infest the tea plants particularly." Of this family there are also *Callidea abdominalis*, *purpurea* and *Roylii*, Hope, and a new species, nearly allied to the last mentioned, which I have named

Sp. 1. *Callidea spinigera*. (Plate XIX. fig. 1.)

C. fusco-testacea, violaceo-vel æneo-nitida, thoracis angulis lateralibus in spinam parvam acutam productis, abdominis margine crenato, rubro, violaceo-variegato, ♂ ♀.

Long. ♂ lin. 7, ♀ lin. 7½, hemelytrorum membrana inclusa.

Broadly ovate, rather convex. Above brownish testaceous, with violet or brassy reflections, very thickly and finely punctured. Head violet, shining, faintly punctured and transversely wrinkled, the central lobe darker in colour. Eyes brown; ocelli red. Thorax faintly punctured, with the lateral angles produced into a small acute spine on each side, the anterior and lateral margins, and in the male the whole anterior portion, coppery or violet, shining; on each side, towards the anterior margin, is a small

transverse fovea, surrounded by a brassy green ring. Scutellum very finely punctured, and faintly wrinkled transversely, especially at the base, which is brassy, coppery or violet. Elytra brown, with the margins pale testaceous. Margins of the abdomen projecting slightly beyond the scutellum, bright red, crenated, each segment bearing two small projections or tubercles; abdomen beneath deep blue violet, very smooth and finely punctate, with a strong brassy green reflection; a violet line on the margin of each segment, running between the red tubercles. Anal apparatus red, violet at base in the male. Breast shining violet, punctured; the antero-lateral margins and the prominent lateral angles reddish. Legs shining violet, finely pilose. Tarsi black. Antennæ and rostrum black, the former covered with short hairs.

This species in its general form, and more especially in the form and colouring of the abdomen, approaches very closely to *C. Roylii;* but it differs from this and indeed from all other known species of the genus, in the sharp spines which exist at the lateral angles of the prothorax. It is probable that the insect, when alive, presents a most splendid appearance, as the metallic tints, which ornament its surface when viewed in certain lights, are evidently only the remains of former brilliancy.

Three more species complete the list of *Scutelleridæ;* they are the *Eucorysses Baro*, Fab.; *Calliphara nobilis*, Fab. (*Tectocoris perplexa*, Hope); and the *Coptosoma cribrarium*, Fab.

Fam. PENTATOMIDÆ.

Of the group *Asopides*, Am. Serv. there are but two species. The first is the *Cazira verrucosa*, Westw. (not Am. Serv.), of which there is a specimen of the male in the typical condition, and one of what appears to be a black variety of the female. The other species appears to be identical with the *Asopus* (*Arma*) *geometricus*, (Hag.) Burm, and approaches very closely to *Pentatoma aliena*, Hope. As neither of the descriptions given by these authors is sufficient to determine the insect perfectly satisfactorily, I have subjoined one in a more detailed form.

Genus Arma, Hahn., Am. and Serv.

Sp. 2. *Arma geometrica.* (Plate XIX. fig. 2.)
Asopus geometricus (Hag.), Burm., Rh., p. 80, 7.
Pentatoma aliena, Hope Cat., p. 40?

A. elongata, olivacea vel fusco-testacea, punctatissima, spinis

thoracis unidentatis; linea transversa thoracis, scutelli apice, marginibusque elytrorum, albidis, ♀.

Long. lin. 7.

Body elongate-ovate, the sides nearly parallel. Olive-brown, or brownish-testaceous, very thickly punctured. Thorax with the lateral angles produced into a short, acute, black spine, which is distinctly toothed on its hinder margin; a pale yellowish line runs across the disc of the thorax from angle to angle. Scutellum rather dark at the base, the apex white.* Elytra with the external margin whitish; the membrane transparent. Abdomen beneath punctured, with an irregular line down the centre, and the stigmata, black. Legs, rostrum and antennæ yellowish brown; the tip of the third joint of the antennæ, and the whole of the fourth, except the base, black. Tarsi pitchy.

Of the *Cydnides* there is only one small species, which appears to agree very nearly with Hope's description of his *Cydnus Capicola*.

Amongst the *Halydes* we have only four species, of which one is the *Halys* (*Dalpada*, A. and S.) *oculata*, Fab.; the second approaches very closely to *Halys obscura*, Hope; the third appears to be undescribed. This species will not enter any of MM. Amyot and Serville's sufficiently numerous genera. According to their systematic table, it should fall in their genus *Thelima*; but it does not at all agree with the characters given of that genus in the body of the work. It appears to me to enter, or to approach very closely to, the genus *Dichelops* of the Marquis Spinola, and under this it will be best to range it. The rostrum barely reaches the second segment of the abdomen. The lateral lobes of the head (fig. 3 *a*) pass the central one considerably, and meet beyond it, but leave a good-sized notch at the apex of the head. The lateral margins of the head are notched a little behind the apex, and again a little before the eyes. The ventral furrow is scarcely perceptible. I call the species—

Sp. 3. *Halys* (*Dichelops?*) *obscura*. (Plate XIX. fig. 3.)

H. (D.) ovata, fusca, punctatissima, antennis rufo-fuscis, articulis 2 ultimis, basi excepto, nigris, ♂, ♀.

Long. lin. 7—7½.

Body ovate. Above brown, obscure, very thickly punctured. Thorax with the lateral angles somewhat prominent, margins pale

* This character is not given by Burmeister.

or yellow. Head, thorax and scutellum slightly clouded with yellowish. Elytra with a reddish tint on the coriaceous portion; membrane transparent, with a pitchy black spot at the internal basal angle. (This spot is concealed by the tip of the scutellum when the wings are closed.) Margins of the abdomen projecting considerably beyond the elytra on each side. Abdomen beneath reddish or testaceous brown, smooth, shining; the disc sparingly, the lateral margins very thickly and finely punctured. Breast concolorous with the abdomen, sparingly punctured, more thickly so at the sides. Legs reddish brown, punctured with black; the tarsi darker. Rostrum reddish brown, darker at the tip. Antennæ of the same colour, the two last joints black, except at the base.

The species appears to vary a good deal, in the colour being paler or darker, and more or less mixed with yellowish.

Plate XIX. fig. 3 *a*, the head seen from above; 3 *b*, the head seen from beneath, laterally.

The fourth species is the *Halys* (*Nevroscia*) *nubila*, Fab.

Of the *Pentatomides* there are also four species, of which two appear to be undescribed. Those already described are the *Strachia limbata*, Fab., a Javanese species, and the Indian *Pentatoma ventralis*, Hope. Nearly allied to the latter is one of the other species, for which I propose the name of—

Sp. 4. *Pentatoma crassiventre.*

P. rotundato-ovatum, olivaceo-testaceum, angulis thoracis prominentibus rotundatis; abdomine testaceo, macula magna subapicali nigra, ♀.

Long. corp. lin. 4, lat. thor. lin. 3.

Body roundish. Above olive-testaceous, opaque, thickly and finely punctured with black. Head very thickly and rather coarsely punctured. Eyes brown. Prothorax with the lateral angles considerably produced on each side, but rounded at the apex; emarginate anteriorly for the reception of the head, the posterior margin straight. The anterior portion of the thorax is more thickly punctured than the posterior, with a faint transverse line on each side near the anterior margin, and a very narrow longitudinal line on the disc, smooth, impunctate. Scutellum rather more faintly punctate towards the apex. Elytra with a small impunctate spot on the disc; the membrane transparent. Back of abdomen pitchy black, the margins testaceous, very thickly punctured with black. Beneath testaceous, smooth, slightly shin-

ing. Abdomen convex, punctured with black, the punctures very close together towards the margins, thus forming a broad cloudy line down each side within the line of stigmata; the base of the second segment, and a large spot in the centre of the fifth and sixth segments, black. Breast and underside of head concolorous with the abdomen. Legs pale testaceous, with distinct pitchy punctures; those on the thighs much larger than those on the tibiæ, the apex of the latter and the tarsi tinted with ferruginous. Antennæ with the two basal joints (which are all that exist in the specimen) pale testaceous; rostrum of the same colour, with the apex pitchy black.

The fourth species appears to be nearly allied to *Cimex rufipes*, Linn., which forms the type of the genus *Cimex*, as restricted by Amyot and Serville. It appears to agree in most of its characters with their description of that genus, but is distinguished from all the other *Pentatomides* by its possessing only two joints in the tarsi. It will probably be found to form the type of a distinct sub-genus; but as the specimen before me is very much mutilated, it will be better for the present to place it provisionally in the genus *Cimex*.*

Sp. 5. *Cimex? Boutanicus.* (Plate XIX. fig. 4.)

C. fuscus, rugoso-punctatus, angulis lateralibus thoracis in processum magnum latum 5-dentatum productis ♀.

Long. lin. 9½, hemelytrorum membrana inclusa.

Body ovate. Above brown, obscure, thickly and strongly rugose-punctate. Head rather thickly punctured, nearly as broad in front as behind, and with the anterior margin strongly notched; slightly wrinkled posteriorly. Eyes pitchy; ocelli yellowish. Thorax with the enlarged lateral angles considerably directed forwards, with five teeth at their apex, of which the third and fourth from the front are rounded, the others acute. A strong spine at each anterior angle of the thorax, immediately behind the eyes, and the antero-lateral margins are strongly serrated. Scutellum rather elongated, narrower towards the apex, which is less punctured than the rest of the body, and margined with yellowish. Elytra rather paler than the rest of the surface,

* MM. Amyot and Serville place this genus amongst the *Rhaphigastrides*, there being a very rudimentary spine at the base of the abdomen; but although the present species possesses the slight keel on the sternum, which might appear to refer it to the following group, yet as I can discover no trace of a ventral spine, I have thought it better to place it in the *Pentatomides*.

thickly and coarsely punctured, and somewhat rugose; membrane brown. The sides of the abdomen scarcely project beyond the elytra. Abdomen beneath reddish brown, smooth, impunctate. Breast paler, with numerous scattered black punctures, which are larger and closer together on the antepectus; a large dull wrinkled patch on each side of the post and medipectus. Coxæ smooth. Legs yellowish brown, mottled with reddish brown; the two-jointed tarsi are rather paler. Antennæ (mutilated) pale yellowish brown, the basal joint, and the others at base and apex, paler. Rostrum pale brown, with the apex darker, and the tip of the basal joint pitchy black.

Plate XIX., fig. 4 *a*, represents the head seen from above; 4 *b*, the head seen from beneath; 4 *c*, a posterior tarsus.

The *Rhaphigastrides* have five representatives in this collection. Of these two belong to the genus *Rhaphigaster*, Lap., and the rest to *Acanthosoma*. Of the former, the universally distributed *Rhaph.* (*Nezara*) *smaragdulus*, Fab., with its variety *R. torquatus*, Fab., is one; the second species forms the type of a very distinctly marked sub-genus. It appears to stand between *Nezara*, Am. and Serv. (*Gastraulax*, H. Sch.), and *Rhaphigaster*, Lap., as restricted by those authors; differing strikingly from the former in the length of the ventral spine; from the second in the strongly developed ventral keel, and from both in the form of the thorax, the form of the head, and several other characters.

Genus Rhaphigaster, Lap.

Sub-genus Prionochilus.

Head (fig. 5 *a*) flat above, narrowed anteriorly, the lateral lobes passing the intermediate, and united in front of it; apex of head rounded, with a very slight notch in the centre. *Eyes* rather small, very slightly prominent, touching the anterior margin of the prothorax. *Ocelli* small, situated rather behind the eyes, and nearer to those organs than to one another. *Antennæ* (fig. 5 *a*) 5-jointed, about half as long as the body; first joint short, not reaching the anterior margin of the head; the other joints gradually increasing in length towards the apex; fourth and fifth joints thickest; fourth slightly compressed. *Rostrum* (fig. 5 *b*) reaching the base of the ventral spine, of four joints; the first short, as long as the head, inclosed entirely in a canal, which reaches the base of the head; second and third joints equal,

longer than the first; fourth as long as the first. *Thorax* inclined anteriorly; the anterior margin strongly emarginate, almost in a semicircle, for the reception of the head; the lateral angles very prominent, acute, and curved forwards, their points reaching beyond the line of the anterior angles; the antero-lateral margins are strongly serrated, and there is a distinct tooth behind each lateral angle. *Scutellum* long, passing the centre of the abdomen, the apex narrowed and rounded. *Membrane of elytra* reaching beyond the apex of the abdomen, with eight longitudinal nervures, of which the third, fourth and fifth from the inner margin spring from a basal cell; the sixth and seventh are united at the base, and the eighth is very short. *Abdomen* extending a little beyond the elytra on each side; beneath strongly keeled, with a strong basal spine, which extends forwards as far as the middle of the space between the intermediate and anterior pairs of legs. *Vulvar apparatus* as in *Rhaphigaster*, &c. *Mesosternum* with a slight keel in the centre. *Legs* rather slender, the posterior longest. *Tibiæ* channelled on the outside, and fringed with small stiff hairs, especially towards the apex. *Tarsi* (fig. 5 *c*) pilose, 3-jointed, basal and terminal joints equal; second very short. *Claws* and *pulvilli* moderate.

The name *Prionochilus* refers to the serrated margin of the prothorax.

Sp. 6. *Rh.* (*Prionochilus*), 8 *punctatus*. (Pl. XIX. fig. 5.)

R. (P.) fusco-testaceus, nigro-punctatus; thoracis disco, scutellique basi, punctis 4 majoribus nigris, his in linea transversa dispositis. ♀.

Long. lin. $10\frac{1}{2}$; lat. thor. lin. 6.

Ovate, testaceous brown, opaque, beneath paler. Above thickly and finely punctured with black. Prothorax strongly rugose-punctate, with four black dots arranged in a transverse line across the disc, from the base of one lateral angle to the other; the marginal serrations yellowish. Scutellum less closely punctured than the thorax, distinctly rugose, with four black dots at the base, placed two close to the posterior margin of the prothorax, about the same distance from each other as from the lateral angles of the scutellum, and two behind these, forming with them a small square. On each side of the tip of the scutellum is a small yellow impunctate spot. Elytra with the punctures arranged somewhat nebularly; a small impunctate spot on the disc, a little behind the middle. Membrane transparent, with a brownish tinge.

Ventral spine brown. Legs, rostrum and antennæ brownish testaceous; the fourth joint of the antennæ, except its base, the fifth joint entirely, and the apex of the fourth joint of the rostrum, black.

Plate XIX., fig. 5 *a*, represents the head seen from above; 5 *b*, the head from beneath and laterally; 5 *c*, a tarsus.

MM. Amyot and Serville have established a genus which they name *Sastragala*, for the reception of such species of *Acanthosoma*, as have the posterior angles of the prothorax much produced into a sharp spine. This character is scarcely sufficient to warrant such a separation, and the greater or less sharpness of the spine is probably only a sexual character. It is to this division of the genus that the three species from Boutan belong; the first being the *Acanthosoma uniguttatum*, Don., the species cited by Amyot and Serville as the type of their genus. The other two appear to be undescribed.

Sp. 7. *Acanthosoma* (*Sastragala*) *cornutum*. (Pl. XIX. fig. 6.)

A. (S.) supra olivaceum, punctatum, thorace cornuto, scutello immaculato, ♂. ♀.

Long. lin. 6; lat. thor. lin. $4\frac{3}{4}$.

♂, ♀. Above olive, slightly clouded with yellowish, rather thickly and strongly punctured. Thorax with the lateral angles strongly cornuted; the processes being more darkly coloured than the rest of the surface. The antero-lateral margins of the prothorax beneath are greenish. Scutellum acute, slightly sinuated on each side immediately before the apex. Elytra thickly and strongly punctured; membrane brownish at the base, particularly at the internal angle. Antennæ with the first and second joints concolorous with the body, the apex, and sometimes the whole of the third, and the fourth and fifth joints pitchy. Legs pale brownish yellow, with the tibiæ and tarsi somewhat darker. Ventral spine long, reaching as far as the base of the anterior legs.

♂, with the thoracic processes dark olive-green, rounded at the apex, beneath flat, but not channelled. The membrane of the elytra is pale, semitransparent; the abdomen above red, with broad whitish margins. The body beneath is pale ochreous, with a reddish tinge towards the apex of the abdomen. Ventral spine pale.

♀, with the thoracic processes pitchy, very acute, the apex recurved, and tipped with bright orange, strongly channelled beneath; the membrane of the elytra is brownish; the abdomen beneath pitchy brown, darkest at the apex, and palest on the outer margins and along the central keel; ventral spine pale, tipped with brown. Breast brownish, with the sternal keel semi-transparent. Head beneath brownish.

This species may be at once distinguished from *A. uniguttatum* by the great size of the thoracic processes; it also wants the large orange spot at the base of the scutellum, which that species possesses.

Sp. 8. *Acanth.* (*Sast.*) *lineatum.*

A. (S.) griseo-testaceum, fusco-punctatum; thorace linea media tenui, longitudinali, flava, elytris macula transversa fulva, ♀. Long. lin. $3\frac{1}{3}$.

Above dusky testaceous, strongly punctured with brown. Head yellow, with a brown line on each side of the median lobe, and a row of brown punctures on each of the lateral lobes. Eyes brown. Thorax with the lateral spines acute, slightly recurved, pitchy brown; a transverse band near the anterior margin, and a narrow longitudinal line along the middle of the thorax, impunctate, yellow. Scutellum, yellowish brown, paler towards the apex, and with a yellow spot in the centre of the base. Elytra with the coriaceous portion dusky testaceous, thickly and strongly punctured, the apex yellowish; a short, transverse, impunctate, orange band, near the outer margin, considerably beyond the middle, directed towards, but not reaching the internal angle; membrane transparent, faintly clouded with brown. Abdomen above deep red, the margins yellowish. Head, thorax and abdomen, beneath, with the legs, rostrum and antennæ, testaceous; the antennæ rather darker. Ventral spine short, scarcely reaching the intermediate legs.

The remaining four species are all described. They are, of the *Edessides*, *Eusthenes robustus*, Le P. and Serv., and *Dalcantha dilatata*, Am. and Serv.; of the *Phyllocephalides*, *Tetroda Histeroides*, Fab., (*Phyllocephala furcata*, H. Schäffer, who quotes Stoll's figure, which is cited by Fabricius for his *Ælia Histeroides*); and lastly, the singular *Megymenum cupreum*, Guér.

XXXVII. *On the British Species of the Genus* Gelechia *of Zeller.** *By* J. W. Douglas, Esq. (*Continued from page* 179.)

[Read May 7th, 1849.]

Sp. 21. *Rufescens.*
Re. rufescens, Haw.
**G. Isabella*, F. v. R.
Acomp. tinctella, St., Wood, 1244 (non H.)

Mr. Allis has Haworth's specimens.

Sp. 22. **Velocella.*
G. velocella, Tis., F. v. R. pl. 77, fig. 4, Z.
Lita velocella, D.
L. subsequella, Tr. (non H.)
An. nebulea, St.? Wood, 1191 (non Haw.)
(non *Ti. populella*, H. 21.)

This is certainly the *nebulea* of Stephens's Cabinet, but the description in his "Illustrations" does not agree with it. Moreover, he says, "found in June in gardens within the metropolitan district," whereas it is never known to be taken but in dry, sandy places far from gardens, such as Jerry's Hill, Putney Heath, the heath field at West Wickham, &c. in April, never in June; I am, therefore, doubtful if this be the species intended by Mr. Stephens. Again, he gives as a synonym "*Ti. populella*, H.," which is a widely different insect, not agreeing with his description at all, and not found in Britain hitherto as far as I am aware; so the name "*nebulea*, St.," adopted on the continent for Hübner's moth, because "*populella*" was already used by Linné, cannot remain for it, and Treitschke's name "*pinguinella*" must be resumed. Zeller says that *velocella* appears twice a year, in April and July; I never saw the second brood.

* Those species marked * are in the collection received from Herr Mann of Vienna.

Sp. 23. *Nigra.*
Re. nigra, Haw.
An. hortuella, Wood, 1189, St.?
An. rusticella, St. (non H. 17.)
An. cautella, D.
**G. cautella*, Z.

Found on the trunks of white poplars, at Wanstead and elsewhere, in July. It is very active and difficult to capture.

Sp. 24. **Gibbosella.*
G. gibbosella, Z.
An. punctella, Bent. (MS.)
An. Zephyrella, St.? (non H.)

Wood's figure 1193 does not represent this insect, it appears to be a copy of Hübner's figure of *Zephyrella*.
Taken in Epping Forest by Mr. Bouchard.

Sp. 25. *Contigua.*
Re. contigua, Haw.
An. tricolorella, St. (non Haw.) Wood, 1215.

Haworth's description is not sufficient to distinguish this species with precision, but his own specimen is in the Collection of the Entomological Society, with the name attached in his own writing, so that I have no doubt this is the species intended by him. The *tricolorella* of Haworth is probably the *Anacampsis decorella* of Stephens, which is an *Elachista*.
Not rare about Camberwell from May to September in white-thorn hedges, in which many other plants grow. I know nothing of its early states.

Sp. 26. *Diffinis.*
Re. diffinis, Haw. St.?
Re. nebulea, Haw.
An. Listerella, Wood, 1190 (bad), (non Haw.)
Lita dissimilella, D. pl. 297, fig. 4.
**G. scabidella*, Z.

This moth is also very imperfectly described by Haworth, but the Entomological Society has Haworth's specimen labelled by himself. I have often taken this species in sandy places at

Putney Heath, Blackheath, and Dartford Heath, in May, and last year at West Wickham Wood in September.

The *nebulea* of Haworth, with his own label attached, is in Mr. Allis's collection, and is *diffinis*, with the markings worn down.

Sp. 27. *Maculella.*
Ti. maculella, F. vol. 3, pt. 2, p. 306, No. 82.
Re. maculea, Haw.
An. maculella, St.
An. nivella, Wood, 1224.
**G. blandella*, F. v. R. (Mann.)

Sp. 28. *Rhombella.*
G. rhombella, Z. (non *An. rhombella*, St., Wood.)
Ti. rhombella, W. V.? H. 277 (not good).
Lita rhombella, Tr.? Dup. pl. 297, fig. 7 (good).
Re. rhombea, Haw.

Expansion of wings 7 lines.

Head ashy grey. Palpi grey, the end of terminal joint black. Antennæ annulated, black and white alternately. Thorax ashy grey. Anterior wings ashy grey, caused by dark atoms on a white ground; a longish black spot at the base on the costa; two black spots on the disc, one before, the other behind, the middle; two small opposite black spots beyond, one of them on the superior the other on the inferior margin, and then a faint fascia. Inferior wings leaden grey. Body ashy.

Mr. J. F. Stephens has two specimens without a name. My examples I received from Mr. S. Stevens, who took them on apple trees. Neither Hübner's figure nor Treitschke's description well agree with our insect, inasmuch as three spots are represented and described as in the centre of the wing, whereas in our moth there are but two so situated, and the shape of the spots is not the same; but both Hübner and Treitschke are quoted by Duponchel, and *his* figure well represents our insect. Mr. Allis has Haworth's specimen.

Sp. 29. **Proximella.*
G. proximella, Z.
Ti. proximella, H. 228 (not good).
Lita proximella, Tr., Dup. pl. 297, fig. 10.
Re. punctifera, Haw.
An. rhombella, St., Wood, 1194.

Mr. Allis has Haworth's specimens, both of his α and β varieties of *punctifera*.

Not rare in birch and alder trees in May and June. Treitschke says the larva is whitish green, with three longitudinal streaks, of which the dorsal one is red, and two lateral ones reddish grey. He also says it feeds on birches.

Sp. 30. **Sequax.*
Rc. sequax, Haw.
**G. apicistrigella*, F. v. R. (Mann.)
Lita apicistrigella, D. Supp. pl. 74, fig. 4 (very bad).
An. contigua, Wood, 1212.

Haworth's specimen, with his ticket attached, is in the Collection of the Entomological Society.

Taken on the downs beyond Croydon in July.

Sp. 31. **Tæniolella.*
G. tæniolella, Z.
Lita tæniolella, Tr. (MSS.)
Harp. cinctella, St.? L.? Wood, 1390.

Anterior wings black, with a white straight fascia in the centre, which shines through on the underside, and is continued on the margin of the posterior wings, which are entirely black on the upper side.

There are two other species closely allied to this one, and there is nothing in the descriptions of either Linné or Stephens to show which one is intended by the name "*cinctella*."

Taken on the downs near Croydon and Mickleham in June.

Sp. 32. *Domestica.*
Rc. domestica, Haw.
An. domestica, St., Wood, 1203.
G. Basaltinella, Z.

I thought from Herr Zeller's description of his *G. Basaltinella* that it referred to this species; but as he found his specimens on Basalt pebbles, covered with moss, at Spitzberg, and we find ours in houses and gardens near London, I doubted if it were really identical. Lately, however, Herr Zeller having sent me specimens, I am sure it is the same species.

Sp. 33. **Lentiginosella.*
G. lentiginosella, Z.
Lita lentiginosella, Tis., F. v. R. pl. 80, fig. 3.

Expansion of wings, $8\frac{1}{2}$ lines.

Head, palpi and antennæ tawny brown. Anterior wings shining, rich reddish brown; on the disc before the middle are two spots,

one above the other, and close together; beyond the middle, in a line with the upper of them, is a single spot, all of these are yellow, each having a black dot in its centre: these spots are not well seen without a lens. On the costa near the apex is a small yellow spot, and another smaller and fainter lies below the apex just within the cilia. Inferior wings dark griseous. Body fuscous.

Described from the only British specimen I know, which was taken by Mr. Sircom on a wall near Brislington, August 7th.

Sp. 34. **Distinctella.*
G. distinctella, Z.
Lita distinctella, F. v. R. pl. 80, fig. 2.

Expansion of wings, 8 lines.

Head, thorax and antennæ tawny brown; palpi fuscous, the terminal joint black, with the extreme tip white. Anterior wings tawny brown, with three black spots as in *terrella*, having close to them, in most specimens, some minute white dots; there is a faint fascia near the apex, and just within the latter are a few black spots. Posterior wings dusky, the apices much less prolonged than in *terrella;* ciliæ rather paler than the wings. Body fuscous.

This species is closely allied to *terrella*, generally larger than that species and most unlike it in the shape of the apex of the posterior wings.

Taken in July in juniper bushes, on the chalky downs beyond Croydon.

Sp. 35. *Vilella.*
G. vilella, Z.

Expansion of wings, $8\frac{1}{2}$ lines.

Head and thorax griseous; antennæ brown; palpi griseous, terminal joint long, brown beneath. Anterior wings glossy, uniformly griseous, with a luteous tinge, dusted all over with brown atoms. At the base on the costa is a black dot, and another smaller one below it near the inner margin. On the disc before the middle is a pale spot, and beyond the middle a still fainter one but rather larger, a darkish line connecting the two; in the centre of the first spot lies a black dot, and two are seen in the second, very faintly marked and distinguishable only with a lens. Posterior wings silver-grey, ciliæ paler. Body griseous.

Taken by Mr. S. Stevens last May on the coast of the Isle of Wight; found once by a friend of Mr. Stainton at Lewisham, and captured by Mr. Hodgkinson at Northfleet.

Sp. 36. *Alacella.*
G. alacella, Z.
Lita alacella, F. v. R., D.

Expansion of wings, 7 lines.

Head, palpi, antennæ and thorax blue-black. Anterior wings blue-black, with three elevated black spots on the disc, each faintly circled with white; a comma-shaped whitish spot on the costa, below it on the inferior margin a very small whitish dot, and a few very small whitish dots just within the apical fringe. Inferior wings grey-black. Body fuscous. The underside of all the wings is grey-black; a small light spot showing on the costa, opposite to the large spot on the upperside.

First taken in this country by Mr. Bedell in the autumn, out of an oak at Leatherhead common, and still a rare species with us.

Sp. 37. *Peliella.*
G. peliella, Z.
Lita peliella, Tis., Tr., D. pl. 297, f. 11.

Expansion of wings, 6 lines.

Head brown, face whitish; palpi, second joint ashy, terminal joint black, white at the tip. Antennæ black-brown, annulated with white, particularly towards the end. Anterior wings black-brown, sprinkled with grey atoms, discernible only with a lens; a black spot near the base, two before the middle and one beyond, these last three having some white scales attached; a yellowish spot on the costa, one opposite on the inner margin, and another at the apex; cilia mixed with grey. Posterior wings dusky. Body fuscous.

This species is very like *alacella*, but the colour of the wings is *brown*, not *blue-black*.

I know only one British specimen taken by Mr. Stainton in the heath-field at Wickham, where there are many fir-trees; and Duponchel, quoting Fischer v. R., says it is found in such places.

Sp. 38. *Subocellea.*
An. subocellea, St., Wood, 1221.
G. internella, Lien., Z.?
**L. dissonella*, F. v. R.?
G. dissonella, Z.?

Recently taken by Mr. J. B. Hodgkinson in the chalk-pits at Northfleet.

Mann's specimen of *dissonella* is larger than any *subocellea* I ever saw, and I think darker, nevertheless I believe it to be the same species, but will not say decidedly without knowing more. Judging from the description, the *internella* of Madame Lienig is possibly the same as our insect, but not having seen it I cannot say positively. These three moths require to be carefully compared.

Sp. 39. **Artemisiella.*

G. Artemisiella, Z.

Lita Artemisiella, Tis., Tr., F. v. R. pl. 30, f. 2, Dup. pl. 297, f. 8.

Expansion of wings, 5½ lines.

Head grey-brown; palpi greyish, tips black; antennæ black. Anterior wings deep brown, in which, with a lens, are seen red streaks; the inner edge is rusty-yellow, especially towards the base. In the centre, towards the apex, extends a dark streak; a black dot at the extreme apex, and two or three others in the disc, more or less visible. Posterior wings fuscous-grey, shining. Body fuscous.

Taken by Mr. Bedell on Epsom Downs, by myself on Stoat's-nest Downs, and by Mr. Logan on Arthur's Seat, Edinburgh, in June and July.

Sp. 40. *Instabilella.*

An. instabilella, Doug. Zool. p. 1270.

I have attempted to describe this species in the Zoologist, but it is one of those of which no good idea can be conveyed by any diagnosis, so slight and so varying are its characters. It seems to be allied to *Artemisiella*, and has like it a black dot at the apex of the wing, a mark, by the way, which is one least subject to variation in this species.

Since I first took it on the salt-marshes in Essex it has been found at the mouth of the Thames and in Ireland, and seems quite a maritime species.

XXXVIII. *Descriptions of some new Exotic* Coleoptera. *By* J. O. Westwood, F.L.S., &c.

[Read 5th March and 2nd April, 1849.]

Family CARABIDÆ.

Sub-family Scaritides.

Genus Carenum, Bonelli.

The two Australian species of this genus, described below, are supplemental to a monograph on the Australian *Scaritides*, published by me in the first volume of the "Arcana Entomologica."

Carenum viridipenne, Westw.

C. prothorace subquadrato, angulis posticis rotundatis; nigrum, læve, nitidum, prothoracis lateribus viridi tenue marginatis; elytris viridibus, punctis duobus prope basin alterisque duobus ante apicem notatis; tibiis anticis extus bidentatis.

Long. corp. lin. 8.

Habitat in Nova Hollandia ad littora fluvii Mundarra dicti.

In Mus. Dom. F. Bond.

Careno smaragdulo, Hope (Westw. Arc. Ent. vol. i. pl. 21, fig. 4), affine, sed minus, angustius, punctis 4 elytrorum distinctum. Caput mediocre nigrum, inter oculos lineis duabus paullo curvatis impressis, antice et postice furcatis, spatio intermedio convexo, puncto impresso intus furcam anticam tuberculoque utrinque ad latera labri transversi denticulati, punctisque duobus aliis utrinque ad marginem internum oculorum. Prothorax subquadratus, longitudine e quinta parte latior, angulis anticis obtusis, posticis rotundatis; tenue marginatus, disco linea tenui media longitudinale impresso, alteraque transversa paullo ante marginem posticum, impressioneque parva utrinque versus eundem marginem. Elytra ovalia, thoracis latitudine, ad costam depressa, glabra, læte viridescentia, disci medio nigro; punctis duobus setigeris prope humeros alterisque duobus pone medium; lateribus marginatis serieque punctorum intra marginem. Pedes breves, robusti; tibiis anticis extus bidentatis, latere interno sub dente priori inermi.

Carenum intermedium, Westw.

C. nigrum, nitidum, subangustum, paralellum, capite utrinque linea curvata impressa notato, pronoto linea media impresso (in medio disci fere obsoleta), elytris 4-punctatis, tibiisque anticis bidentatis.

Long. corp. lin. $9\frac{1}{4}$; lat. prothoracis lin. $2\frac{3}{4}$.

Habitat in Adelaida, Novæ Hollandiæ. Dom. Smith.

In Mus. Westw.

C. tinctilato affine, at angustius. Caput prothorace paullo angustius, læve, nitidum; angulis anticis supra basin antennarum rotundato-prominentibus. Clypeus antice recte truncatus, utrinque tuberculo conico porrecto, ad latera labri. Labrum brevissimum, transversum, subtrilobatum. Vertex inter oculos utrinque linea curvata impressa notatus, ad basin externum mandibularum antice extensa, lineam tenuem vix distinctam (furcam anticam formante) antice emittenti, punctisque duobus setigeris ad marginem internum oculorum. Prothorax quadratus; angulis posticis rotundatis, seu potius semi-ovalis, angulis anticis obtusis, lateribus tenue marginatis, punctis tribus parvis intus marginem, impressione transversa ante apicem, impressionibus duabus fere indistinctis intus angulos posticos, disco linea tenui longitudinale impressa (ante basin et apicem abbreviata, at in medio disci fere obliterata). Elytra elongato-ovalia, satis angusta, in medio parum latiora, convexa, lævia, nitida, marginata; lateribus anguste cyaneo-tinctis, et serie punctorum impressis, singulo etiam ad basin punctis tribus transverse positis, intermedio minori, punctisque duobus majoribus impressis, uno versus basin, altero ante apicem. Pedes satis graciles, tibiis anticis latis, extus bidentatis.

I am indebted to W. P. Smith, Esq., of Caernarvon, a very assiduous Coleopterist, for my specimen of this and other rare insects from Adelaide.

Family HELOPIDÆ.

Genus novum. Prophanes, Westw.

Corpus alatum, oblongum, depressum, pedibus subelongatis. Caput mediocre, clypeo transverso, angulis anticis rotundatis, supra basin antennarum extensis, labro transverso, instrumentis cibariis ut in *Helopidibus* genuinis; palporum maxillarium articulo apicali securiformi; labialium subsecuriformi

parvo. Mandibulæ apice bidentato, intus incisione profunda membrana tecta. Antennæ mediocres, articulis duobus basalibus brevibus, 3-tio omnium longissimo; ultimis brevioribus, submoniliformibus, non aut vix incrassatis. Prothorax latior quam longus, antice angustior, disco parum convexo. Elytra oblongo-subovata, subdepressa, parum rugosa, lateribus fere parallelis ad basin prothorace latiora, ultra medium paullo dilatata, apicibus sensim attenuatis. Pedes satis elongati, simplices, tarsis heteromeris haud dilatatis. Prosternum pone basin pedum anticorum extensum in fossula triangulari mesosterni subreceptum, metasternum satis elongatum, postice inter trochanteres posticos emarginatum et ante apicem in medio profunde impressum.

This genus approaches very near to *Cyphaleus*, Hope (Westw. Arc. Ent. vol. i. pl. 12, fig. 1), but is distinguished by its more flattened form and less rugose surface. The species have somewhat the appearance of large narrow metallic-coloured species of *Colymbetes*. They are exclusively natives of Western and Southern Australia.

Sp. 1. *Prophanes aculeatus*, Westw. (Pl. XXIV. fig. 4.)

Pr. niger, elytris nigro-æneis, nitidis, irregulariter punctatis, lineisque subelevatis notatis, apicibus acuminatis, prothoracis angulis anticis acute porrectis, disco bi-impresso.

Long. corp. lin. 12.

Habitat apud Swan River, Novæ Hollandiæ.

In Mus. Melly.

Antennæ subbreves, articulis apicalibus parum latioribus. Prothorax transversus, lateribus fere rectis, versus angulos posticos paullo rotundatis, angulis anticis elongato-aculeatis, lateribus marginatis, disco tenuissimè punctato, in medio biimpresso, utrinque etiam ad marginem posticum fossula parum profunda instructo. Elytra ad apicem sensim attenuata et singulo in spinam terminalem producto, disco singuli lineis tribus parum elevatis glabris, interstitiis punctatis.

Sp. 2. *Prophanes metallescens*, Westw. (Pl. XXII. fig. 5, and details).

Pr. niger, nitidus, punctatus, elytris æneo purpureoque tinctis, apicibus truncatis, angulis externis truncaturæ spinosis, prothoracis angulis anticis acute porrectis, angulis posticis oblique truncatis.

Long. corp. lin. 11.

Habitat in Nova Hollandia, ad littora fluvii Mundarra dicti.
In Mus. Dom. F. Bond.

Præcedenti minor, et angustior, antennis pedibusque gracilioribus et paullo longioribus. Caput magis elongatum, oculis permagnis in occiput fere conjungentibus. Palpi maxillares articulo ultimo magis securiformi. Antennæ graciles, articulis ultimis præcedentibus brevioribus at non crassioribus. Prothorax lateribus profunde marginatis, fere rectis, angulis anticis valde et acutissime porrectis, angulis posticis oblique truncatis, disco punctato, margineque postico utrinque impressione ovali parum profunda notato. Elytra lateribus valde marginatis, apice truncata, angulis externis truncaturæ spinâ acutâ armatis; punctata, punctis versus basin majoribus, nigris, purpureo-nitidis, regione scutellari æneo, apicibusque late viridi-cæruleis (colore purpureo fasciam latam ex humeris ad apicem suturæ formanti). Antennæ et pedes nigri, tibiæ 4-posticæ intus pilis nigris vestitæ.

Sp. 3. *Prophanes simplex*, Westw.

Pr. niger, nitidus, sub lente tenuissime punctatus, elytris parum æneo-tinctis, prothorace elytrisque ad apicem inermibus.
Long corp. lin. 10.
Habitat in Nova Hollandia, Port Philip.
In Mus. Hope et Westw.

Caput sub lente punctatum, impressione transversa ante oculos clypeo profunde emarginato, emarginatura membranacea, antennis palpisque piceis. Prothorax transversus, lateribus marginatis, parum rotundatis, antice angustior; disco sub lente punctato et sparsim setoso, utrinque pone oculos et ante scutellum bi-impresso. Scutellum basi lævе. Elytra prothorace latiora, lateribus subparalellis, ad apicem acuminata, haud spinosa, parum convexa; sub lente punctatissima et longitudinaliter costata, costis numerosis at fere indistinctis. Corpus subtus cum pedibus nigrum, sparsim punctatum et setosum.

Sp. 4. *Prophanes striato-punctatus*, Westw.

Pr. niger, nitidus, elytris cæruleo-nigris, profunde striato-punctatis; prothorace et elytris inermibus. Magnitudo *Pr. simplicis*.
Habitat in Nova Hollandia. Melborne.
In Mus. Melly.

Genus novum. Platyphanes, Westw.

Prophani affine. Corpus latum, sub-semiglobosum. Caput parvum. Labrum breve, transversum. Mentum postice angustatum, maxillarum basin haud tegens. Palpi labiales articulo ultimo valde securiformi. Antennæ breves, articulo 3tio longo, apicalibus sensim incrassatis. Prothorax transversus, antice angustior, lateribus curvatis marginatis, margine postico in medio parum producto. Elytra lata, valde convexa, breviter sub-cordata, apice inermia. Prosternum postice prominulum, in mesosterni processu bifido receptum. Corpus subtus fere planum.

Platyphanes gibbosus, Westw. (Pl. XXII. fig. 6, and details.)

Pl. supra nigro-æneus, nitidus, capite et pronoto lævibus, elytris ad basin magis cæruleis; singulo striis 14 punctatis, ante apicem evanescentibus; corpore subtus nigro nitido.

Long. corp. lin. 11.

Habitat in Nova Hollandia.

In Mus. Melly.

Platyphanes vittatus, Klug, MS.

Pl. sub-globosum, viride, metallicum, elytrorum singulo vitta lata rufa nitida metallica cum sutura paralella, ornato.

Long. corp. lin. 7.

Habitat Adelaida, Novæ Hollandiæ.

In Mus. Melly.

Family BRENTHIDÆ.

Genus Taphroderes, Schönh.

Taphroderes distortus, Westw. (Pl. XXII. fig. 3, and details.)

Elongatus, gracillimus, subcylindricus, glaberrimus, lævissimus; totus rufo-castaneus, pronoto et vitta suturali elytrorum nigricantibus, elytris apice truncatis, striis duabus impressis juxta suturam, alteraque intra marginem lateralem, disco subobsolete striato punctato; mandibulis maris difformibus, dextra parva apice truncata, basi supra dente recurvo armata; sinistra capitis longitudine, curvata, apice valde obtuso, margine supero dente obtuso denteque altero interno versus basin armata.

Long. corp. lin. 7 (mandibulis maris inclusis).

Habitat in Natalia.

In Mus. Westwood (♂). Mus. Brit. (♂ ♀).

Male.—The head of the male is nearly equal to the prothorax in length. The eyes are situated at about one-third of the distance from its anterior edge, and behind the eyes it is rather swollen, being again contracted close to the prothorax into a rather narrowed very short neck. The anterior extremity of the head is triangular and deeply excavated, the excavation terminated behind by a slightly curved and raised ridge, at the sides of which, very near the outer base of the mandibles, the antennæ are fixed; which are scarcely longer than the head, with the four terminal joints wider and larger than the intermediate ones. The mandibles are very remarkable in their construction. The right one is about one-fourth of the head in length, slightly curved, and seen laterally almost square, with the end truncate and rather emarginate; the upper basal angle is produced into a strong obtuse tooth extending backwards over the base of the right antenna. The left mandible is as long as the head, compressed, curved, deflexed at its extremity, which is obtuse, angulated on the upper edge with a strong obtuse tooth beyond the middle, and with a deep notch forming a strong tooth on the inside. The maxillæ are very minute, formed of a single elongate internally ciliated lobe, narrowed to the tip and angulated at the base, from which arise the small sub-conical and apparently only three-jointed palpi, the terminal joint of which is the smallest, and pointed. I have not been able to determine the form of the mentum, or to discover any traces of the labial palpi. A minute horny piece, emarginate on its inner edge, and with a small bundle of setæ in the middle of the outer edge, terminated also by several shorter setæ, was observed within the mouth on dissection, and may be the mentum injured by the knife.* The prothorax is about two-thirds of the length of the elytra; it is highly polished, with a slightly raised ring in front, behind which it is rather constricted, owing to the lateral excavations for the reception of the fore legs, common to the species of *Taphroderes*, as well as to other insects which reside, as these insects doubtless do, in cylindrical burrows in wood. The legs are also very short,

* The structure of the instrumenta labialia in the *Brenthidæ* does not appear to have been hitherto determined. Within the mouth of *Brenthus Temminckii*, the largest species of the family, I have observed a small horny piece, dilated and deeply bifid in front, the undersurface of the head being terminated by a deeply emarginate horny plate, which is doubtless the extremity of the jugulum, the small bifid piece being most probably the representation of the mentum destitute of labium and labial palpi. In *Arrhenodes litigiosus*, Dej. (Columbia), I have observed a distinct transverse mentum, narrowed at the base, rounded at the lateral angles and emarginate in front; its inner surface is clothed with fine short hairs, but I have found no trace of labium or labial palpi.

and the tibiæ are not more than half the length of the tarsi, a peculiarity which of course permits greater flexibility in the limb; the anterior femora are the thickest, but all the legs are simple, the tarsi are four-jointed and compressed, the three basal joints setose beneath, the third shortest and notched above for the reception of the base of the terminal joint, which scarcely exhibits any trace of the node at the base. The abdomen is singularly formed, the greater portion of the ventral surface being occupied by the basal joint, which is very convex. This is followed by two very short tranverse joints, obliquely truncated, the terminal joint being also very short, semi-oval, and with a deep central longitudinal channel. The wings are nearly twice the length of the elytra, folded near the middle, the apical half traversed by three longitudinal veins.

The female has the head formed somewhat like that of the specimen of *Taphroderes Whitii* figured in my Cabinet of Oriental Entomology, pl. 15, fig. 6, the snout being nearly half as long as the head, and about two-thirds of its width, with the antennæ inserted at a little distance in front of the eyes; the mandibles are minute, conical, pointed at the tip, with a very small tooth on the inside. The legs are simple, and the antennæ are like those of the male.

The rarity of the species of *Taphroderes*, and the remarkable sexual differences which they exhibit, render the discovery of both sexes of another species very instructive. The specimens of *Taph. Whitii*, which I have hitherto observed, (another having been recently received by the Entomological Society from India, in the splendid collection forwarded by Captain Hutton,) nearly agree with the female of *T. distortus* in the form of snout (except that it is rather wider and the antennæ are affixed nearer to the apex than to the eyes) and also in the antennæ, peculiar excavated sides of the prothorax and tarsi; but the prothorax is strongly punctate, and the elytra are rounded at the apex and regularly punctate-striate; but the most remarkable character of *T. Whitii*, which leads at once to the idea that the specimens are males, is the elongation of the hind legs, with the strong clavation of the posterior femora.

Captain Parry's Ceylon *Taphroderes* has a still shorter and broader rostrum, rather dilated at its extremity, with the antennæ affixed about half-way between the eyes and the apex, and the hind femora are broad and compressed, with a deep notch both on the upper and lower edge: the elytra are deeply punctate-striate and the tip rounded. Compared with the specimen of *Taphroderes 4-signatus*, Buq., next to be noticed, this Ceylon insect must be

regarded as a male, especially from the shortness and breadth of the muzzle and the form of the mandibles, which is another reason for considering the specimens of *T. Whitii* to be males. The only specimen of *T. 4-signatus* which I have seen in the British Museum Collection has the muzzle much narrower than in any of the preceding insects, with the antennæ inserted at its base at some distance from the eyes; its extremity is notched, and the mandibles are minute, conical, and porrected; the legs simple, the elytra glabrous, except an impressed stria near the suture, and another within the lateral margin. This specimen, I apprehend, is a female.* All these insects are remarkable for having the fore legs more powerful than the middle ones. They are also very valuable for enabling us to determine with precision the affinities of that most remarkable insect *Calodromus Mellii*, with which they agree in the general form of the body, excavated sides of the prothorax, elongated basal joint of the abdomen and structure of the normal tarsi. The antennæ have only the three terminal joints dilated, as in *T. Whitii*, *4-signatus*, and *Westwoodii;* whilst there are four dilated joints in *T. distortus*, the muzzle is not elongated in either sex, the head not exhibiting any marked difference between them, and the abnormal condition of the hind legs is found (in a different state of development) in both sexes.

The very singular formation of the mandibles of the male of *T. distortus* may be regarded, I think, as the greatest departure from that law of symmetry which exists so universally in the limbs of the two sides of insects. That some difference of form should exist between the two opposite organs of an insect which act upon each other is not surprising. Indeed it is curious that so little attention has been paid to this difference; the mandibles, for instance, must differ to a certain extent in the position of the teeth depending upon their action upon each other, and yet we find, in general, a single mandible represented as affording the only necessary character to be derived from the examination of the mandibles. Where also the upper wings act upon each other, as in the musical organs of the *Gryllidæ*, a difference must also exist between the two organs on the opposite sides of the body. In the insect before us, however, there seems no necessity for the singular discrepancy between the two mandibles, the extremity of the left mandible extending far beyond the right one; indeed, if I had not seen more than a single specimen of the male insect, I should have considered it as a monstrosity.

* See *ante*, p. 184, for figures of the details of different species of *Taphroderes*.

Section LONGICORNES.

Genus novum. Erichsonia, *Westw.*

Corpus elongatum, parallelum, subcylindricum.

Caput breve, transversum, prothorace vix angustiore ; facie perpendiculari, 4-carinata; clypeo in angulum inter mandibulas producto, labrum occultanti. Oculi laterales reniformes. Antennæ ante oculos prope mandibulas insertæ, prothorace breviores, articulis subserratis, apicalibus sensim gracilioribus. Labrum haud visibile. Mandibulæ breves, subtrigonæ, apice acutæ, sub apicem bifidæ, intus edentatæ, basi intus parum dilatatæ. Maxillæ breves, basi extus dilatatæ, lobo apicali elongato simplici longe setoso, lobo interno obliterato. Palpi maxillares in scapum distinctum inserti, articulis 4; basalibus brevibus subæqualibus, articulo apicali reliquis simul sumtis fere æquali, oblongo-ovali. Mentum brevissimum, transversum, medio marginis antici emarginato. Labium parvum, integrum, setosum. Palpi labiales in scapos laterales insidentes, 3-articulati, articulo ultimo majori, paullo curvato et precedentibus parum crassiori. Prothorax oblongus, angulis omnibus obtusis, disco 4-carinato. Elytra prothorace vix latiora oblonga, parallela, basi truncata punctata ; apice rotundata. Pedes breves, crassi, tibiis ad apicem bicalcaratis, calcari uno in pedibus anticis valde elongato, tarsis angustis, valde setosis, articulo 3tio obcordato. Abdomen e segmentis quinque æqualibus constans.

This insect has so singular a facies, that its real affinities might be easily overlooked. Thus in its general shape, colour and remarkably sculptured prothorax, it bears a strong primâ facie resemblance to *Rhysodes* and the allied genera ; yet its more important characters prove that, notwithstanding the shortness of the antennæ, its legitimate position is amongst the Longicorn beetles, and amongst these I know no other insects towards which it approaches more closely than to *Parandra* and *Spondylis*.

The general character of the underside of the head and trophi is essentially that of the Longicorn beetles, but the carinated head, and serrated antennæ attenuated to the tip, as well as the large hooked spur of the fore tibiæ and the very short hind legs, are especially characteristic. The tarsi are strictly pseudo-tetramerous, the third joint being heart-shaped, with the real fourth joint very minute and fixed in the deep impression of the preceding joint; the terminal joint is nearly as long as all the preceding joints taken together. The elytra are $2\frac{1}{2}$ times longer

than wide, and the apex of the prosternum is deflexed, and extends in a rather narrow carina between the anterior coxæ, scarcely reaching backwards beyond the latter; the mesosternum is simple. The mandibles are bifid at the tip, but the under tooth is scarcely visible when seen from above. The anterior surface of each of the joints of the antennæ (after the second) is impressed and covered with a papillose membrane, and the tibia are furnished with two spurs, one of which in the fore legs is nearly as long as the basal joint of the tarsus; on the other feet they are of equal size.

With the typical *Cucujidæ* (with which it has been regarded as allied) this insect possesses but little real affinity, as may be seen by consulting my illustrations of a paper on the relations of the genus *Clinidium*, published in the last volume of the Zoological Journal, whereas the details of *Spondylis*, there given (Pl. XLVII. Supp. fig. 8), are much nearer in affinity. There are two remarkable genera represented with their details in my "Cabinet of Oriental Entomology," Pl. XLI. fig. 6 and 7, under the names of *Prionophora* and *Petalophora*, also of doubtful relationship, which it will be serviceable to compare with the insect before us, nor must *Trictenotoma* and *Hypocephalus* be overlooked.

Erichsonia dentifrons, Westw. (Pl. XXII. fig. 2, and details.)

E. castanea, nitida, rude punctata, capite antice longitudinaliter 4-carinata, carinis intermediis contiguis; pronoto etiam 4-carinato, carinis lateralibus ex angulis anticis fere ad marginem posticum suboblique extensis, intermediis antice et postice abbreviatis; elytris pallidioribus, nitidis, irregulariter punctatis, lateribus setosis.

Long. corp. lin. $5\frac{1}{2}$.

Habitat in Mexico.

In Mus. Chevrolat, etiam olim in Mus. Dupont, Parisiis.

The Coleopterous insect last described is so singular and interesting in its relations, that I have not hesitated to depart from the ordinary rule of Entomological nomenclature, by giving to it a generic term, commemorative of the name of an Entomologist of the highest excellence, who has lately been removed from among us. I am well aware of the objections which have been raised against the use of names of individuals as applied to designate insects or other objects of nature, either generically or specifically. Some authors indeed seem to take up a name of this kind in many cases, for want of a better, and therefore we often see

the name of an excellent author applied to a species which is so insignificant and obscure as not to possess characters sufficiently marked to furnish a characteristic specific name. Other authors, again, seem to delight in taking up such commemorative names by way of raillery, or even from spite. Of this latter malappropriation it would be invidious to cite examples, although they are well known to many naturalists and Entomologists.*

The real principle which ought to be our guide, in the application of such names, is admirably expressed in the two following aphorisms of Fabricius. "Nomina trivialia ad clarissimorum virorum memoriam conservandam introducta sancte servanda. Hoc unicum et summum laboris præmium caste dispensandum ad imitamentum et ornamentum Entomologiæ."†

Can it however be said to be an "ornamentum Entomologiæ" to see its nomenclature defiled by instances of bad feeling or worst taste? Are these honorary titles "caste dispensanda" when the names of worthy writers are wilfully conjoined for ever with insignificant species of *Scolopendræ*, spiders, or other venomous or parasitic insects? I am quite willing to believe, that in many cases an author has been anxious to confer a distinction on his fellow labourer by such a step, but his judgment has been at fault, and in some cases his desire to please has proved a source of annoyance and ridicule. The Fabrician rule does not appear to me sufficiently strong in this case. It merely says, "Scopoli hic nomina trivialia aranearum recepit, at minus placent, aranearum species luridæ ingratæ nec adhuc rite determinatæ." I would go much farther, and would erase every commemorative name of this kind, known to have been suggested by the feelings I have above spoken against, and even such as suggest any other idea but that of honour to the person whose name is so commemorated.

Another circumstance connected with the employment of proper names, which does not appear to me to have been sufficiently attended to, is its adoption for all the species throughout certain groups. No one advocated uniformity more than Linnæus, and his plan of commemorative names is very worthy of being pursued. "Nomina trivialia Papilionum splendidorum patronorum fautorumque memoriæ, Pyralidum vero amatorum, Tinearum denique scriptorum dicant a Linné, quem et nos secuti sumus." We know, too, how carefully he followed this system, even in the divisions of his Greeks and Trojan butterflies. How

* See e. g. Smith, Introd. to Botany, by Hooker, pp. 189, 190.

† Philosoph. Entomol. pp. 118, 119.

irksome is it then to see the mode in which the names of the species of some modern groups are manufactured. Here we see the names of Gods and Heroes, in the nominative case, applied to the most diminutive species, mingled with those commemorative of previous writers or collectors in the nominative or genitive cases, and these again with simple adjectives.

We cannot in these matters do better than follow in the footsteps of the great masters of our science, and therefore it is that I would advise the plan adopted by Mr. Kirby, of distinguishing the names commemorative of Entomological writers by the termination *ella*, and those of collectors by the termination *ana*, or some such like plan.

The employment of these commemorative names for generic purposes has not been carried so far in Zoology as in Botany. That there was a reason for this at first is evident from the words of Fabricius—"Botanica nomina generica hunc in finem introduxerunt, at in Entomologia genera pauciora raroque nova deteguntur."* But Zoologists are now at no loss for new genera, and therefore, except for the sake of preserving the long maintained uniform plan of employing them specifically in Zoology and generically in Botany, there is no good reason why the name of an Entomologist, as well as that of a Botanist, should not be converted into a generic name. If done at all, however, it ought to be confined to notable genera, respecting which there can be no diversity of opinion, and which, from their singularity or beauty, cannot but be retained conspicuously in the system.

Section PHYTOPHAGA.

Family HISPIDÆ.

Genus Diphyllocera, *Westwood.*

Corpus ovale, antice angustatum, nitido-metallicum, disco elytrorum punctis magnis excavato.

Caput parvum, inerme, irregulare. Labrum parvum, transversum, angulis anticis rotundatum, ciliatum. Mandibulæ parvæ, corneæ, apice acute bidentatæ. Maxillæ parvæ, bilobatæ, lobo externo tenui palpiformi et quasi biarticulato, lobo interno latiori obtuso setoso. Palpi maxillares 4-articulati, articulo basali minimo, 2ndo et 3tio majoribus, subæqualibus, apice crassioribus; 4to brevi crasso. Antennæ elongatæ, subincrassatæ, extus serratæ, articulis tertio ad 6m sensim externe dilatatis, 8vo, 9mo et 10mo extus valde dila-

* Op. Cit. p. 119.

tatis, ultimo ovali. Mentum parvum, subquadratum, antice parum latius. Labium fere rotundatum, disco elevato minori rotundo. Palpi labiales breves tenues, 3-articulati, articulis longitudine fere æqualibus, intermedio crassiori. Prothorax transverso-quadratus, angulis acutis, lateribus fere parallelis. Elytra subovalia, prothorace latiora, disco punctis magnis excavatis, triplici serie ordinatis. Pedes simplices, satis crassi, tarsis brevibus, latis, articulo 3tio bilobo.

This beautiful insect in some respects approaches the genera *Phyllocharis* and *Eumolpus*, but it seems, on the whole, more nearly related to *Hispa* and its allies.

Diphyllocera gemellata, Westw. (Pl. XXII. fig. 1.)

Viridi-ænea, nitida, purpureo cupreoque tincta, elytris punctis maximis excavatis, triplici serie ordinatis, femoribus castaneis, antennis chalybæis.

Long. corp. lin. 5.

Habitat in Nova Hollandia.

In the British Museum, and in the Museum of the Naval and Military Institution.

DESCRIPTION OF THE FIGURES.

Pl. XXII. fig. 1. *Diphyllocera gemellata.*

Fig. 1 *a*, labrum; 1 *b* and 1 *c*, mandibles; 1 *d*, maxilla; 1 *e*, mentum, labium and labial palpi.

Fig. 2. *Erichsonia dentifrons.*

Fig. 2 *a*, head and antenna seen in front; 2 *b*, head seen from above; 2 *c*, head and base of antenna seen from beneath; 2 *d*, head and prothorax seen laterally; 2 *e*, mandible; 2 *f*, maxilla; 2 *g* and 2 *h*, mentum, labium and labial palpi, in different positions; 2 *i*, fore tarsus and tip of tibia.

Fig. 3. *Taphroderes distortus.*

Fig. 3 *a*, left mandible seen sideways; 3 *b*, right mandible seen sideways; 3 *c*, maxilla; 3 *d*, mentum? 3 *e*, abdomen seen from beneath; 3 *f*, head and antenna of female.

Fig. 4. *Prophanes aculeatus.*

Fig. 5. *Prophanes metallescens.*

Fig. 5 *a*, maxilla and mentum, &c.; 5 *b*, antenna; 5 *c*, promeso- and metasternums.

Fig. 6. *Platyphanes gibbosus.*

Fig. 6 *a*, body seen sideways; 6 *b*, pro- and mesosternums; 6 *c*, antenna.

XXXIX. *On some new Species of* Erycina. *By* W. W. Saunders, Esq., F.L.S.

[Read 5th February, 1849]

In the following paper I propose giving descriptions of several new species of the tailed *Erycinas*, for the discovery of which Entomology is indebted chiefly to the exertions of Mr. Jurgensen in Mexico, of Mr. D. Dyson in Honduras and Venezuela, and more recently to Messrs. Wallace and Bates in the vicinity of Para. At the same time I shall add references to the species already described, so as at once to bring under the eye all that is at present known of this interesting group of diurnal *Lepidoptera*.

I do not find that this group has been treated on since the publication of M. Morisse's monograph in the 6th vol. of the Annales of the Entomological Society of France. This author enumerates six species, and I am fortunate now in being able to double this number. Our knowledge of the various species is still very imperfect, and in several instances only one sex is known. As the sexes vary greatly in outline and colouring, further investigation will in all probability prove that some of the species founded upon the female sex will not stand good. In geographical range the species appear to be confined to the continent of tropical America, Mexico being the northern, and Brazil the southern, limits of their range. Several sub-genera have been proposed for dividing the tailed *Erycinas;* but, looking to the imperfect knowledge we yet possess of the species, and the length of the palpi, on which the sub-genera chiefly depend for characters, how these palpi gradually diminish by almost imperceptible degrees, from the long porrect ones to those scarcely apparent, I shall for the present include all the species under the generic term *Erycina*, with such divisions as appear to be desirable for bringing the species most nearly allied together. In determining the species I have received assistance from my friend Mr. E. Doubleday, who has kindly furnished me with descriptions of those species which I could not without get access to so readily as he is able to. For the excellent figures accompanying this paper I am indebted to the talented pencil of another friend, Mr. Westwood.

TABULAR ARRANGEMENT OF THE SPECIES.

ERYCINA.

Wings not transparent.

Tails of the wings long and narrow. Palpi much projecting.

ERYCINA, Bois.

1. *Butes*. (Clerck.)
2. *Rhetus*. (Cram.)
3. *Thia*. (Morisse.)
4? *Aristoderus*. (Bois.)

Tails of the wings broad, varying in length.

Palpi slightly projecting.

DIORHINA, Morisse.

5. *Laonome*. (Morisse.)
6. *Dysonii*. (Saunders.)
7. *Psecas*. (E. Doubleday, Brit. Mus. Cat.)
8. *Iphinoe*. (Hüb.)

Palpi little apparent.

ZEONIA, Morisse.

Wings without blue shades on the undersides.

White banded.

9. *Jurgenscnii*. (Saunders.)
10. *Periander*. (Cram.)
11. *Calphurnia*. (Saunders.)

Yellow banded.

12. *Aulestes*. (Cram.)
13. *Glaphyra*. (E. Doubleday, Brit. Mus. Cat.)
14. *Pandama*. (E. Doubleday, Brit. Mus. Cat.)
15. *Tedia*. (Cram.)
16. *Lysippus*. (Drury.)

Wings of the males with blue shades on the undersides.

Red banded.

17. *Pyretus*. (Cram.)
18. *Julia*. (E. Doubleday.)
19. *Montezeuma*. (Saunders.)

Yellow banded.

20. *Inca*. (Saunders.)

Wings transparent.

21. *Chorineus.* (Cram.)
22. *Heliconoides.* (Swainson.)
23. *Timandra.* (Saunders.)
24. *Xantippus.* (G. R. Gray.)

Sp. 1. *Erycina Butes.*

Papilio Butes, Clerck. Icon. Tab. 46.
——— *Licarsis*, Fab. Ent. Syst.
Erycina Licarsis, Godt. Enc. M.
Rhetus Crameri, Swainson, Zool. Ill. 2 Ser. t. 33.
Erycina Licarsis, Morisse, Ann. Soc. Ent. France.
Diorhina Rhetus, Brit. Mus. Cat., p. 3.
Diorhina Butes, Brit. Mus. Cat., p. 4.

Hab. Brazil, Venezuela, &c.
In my own collection, and that of the British Museum, &c.

This is one of the species which occurs most frequently in collections, and is subject to vary in the brightness of its colours. A very beautiful variety is figured at Pl. XX. fig. 6, which differs from the type in almost entirely wanting the blue at the base of the anterior wings, and in having the crimson mark of the posterior wings extending nearly to the outer margin.

Sp. 2. *Erycina Rhetus.*

Papilio Rhetus, Cramer, Tab. 63, fig. G.

Hab. Surinam, (Cramer).

Upon careful examination of all the allied species and comparing them with Cramer's figure, the latter appears to represent a distinct species, and may be known by the long black tails to the wings, the small crimson spot on the inner margin of the posterior wings, and the obsolete bluish band which appears immediately behind the latter.

Sp. 3. *Erycina Thia*, Morisse, Annales de la Soc. Ent. de France, vol. 6, Pl. 11, figs. 3 and 4.
Diorhina Thia, Brit. Museum Cat., p. 4.

Hab. Mexico, (Morisse).
,, Honduras, (Dyson).
In my own collection and that of the British Museum.

Sp. 4. *Erycina Aristoderus*, Boisduval, Annales of the Soc. Ent. de France, vol. 6, p. 420.

Hab. Cayenne, (Morisse).

This is only known to me by the description above referred to.

Sp. 5. *Erycina Laonome.*

Diorhina Laonome, Morisse, Ann. Soc. Ent. de France, vol. 6, pl. 14, figs. 5 and 6.

Erycina Iphinoe, ♂, Godt. Encyc. Méthod. t. ix. p. 565, 567, according to Morisse.

Hab. Brazil.

,, Venezuela, (Mr. Dyson).

In my own collection and that of the British Museum.

Not an uncommon species.

Sp. 6. *Erycina Dysonii.* (Pl. XX. fig. 1 and 1 *a*, ♂; fig. 2 and 2 *a*, ♀.)

Anterior wings above black, each crossed with two obscure whitish narrow transverse parallel bands, the outer one nearly central, the inner one about midway between the outer one and the base of the wing, the ground colour between the bands having a rich bluish-purple iridescence. The posterior wings, each produced into a longish rather acutely pointed tail, having a large tooth on the inner margin at the base; above black, tinted with a rich changeable purplish-blue colour extending over the whole surface, except on the outer and inner margins, with two obscure narrow, dull, whitish bands, corresponding in direction to those of the anterior wing, and terminating at a curved irregular band of crimson colour, which commences on the inner margin a little below the apex of the abdomen, thence curving downwards for a short distance, crosses more than half the wing in an upwards direction, leading to the anterior angle, and has a small oval crimson spot a little above its termination; also with two faintish white streaks immediately under the crimson band, a white speck on the tip of the tail, and another on the indentation caused by the tooth at the base of the tail, which is black.

Undersides of the wings dull brownish-black, crossed with bands corresponding with those of the upper surface, but broader; the colour between the bands with a dull purplish iridescence; and the upper wings having an oblong crimson spot at the base on

the anterior margin. Head, antennæ, and body black; the abdomen with a yellow streak on each side; legs fulvous.

Hab. Venezuela, (Dyson).

Expansion of wings $1\frac{7}{10}$ inches.

In my own collection and that of the British Museum.

The foregoing is the description of the male insect discovered in Venezuela by Mr. Dyson, after whom I have named the species. The female differs in having the upper surface of a silvery-grey tinged with blue at the base, traversed by two broad, distinct, whitish bands, in the same position as the slender lines in the male. The tails of the posterior wings have a distinct white litura at the base. The lower surface only differs from the upper in being rather paler and less brightly coloured.

Sp. 7. *Erycina Psecas.* (Pl. XX. fig. 4 and 4 *a*.)
Diorhina Psecas, Brit. Mus. Cat., p. 3.

Above anterior wings of a brilliant changing blue, from the base to beyond the middle; the costa and the outer margin fuscous. The posterior wings are also of a brilliant blue, with the outer margin fuscous. Close to the base of the anterior wings is a pale bluish-white subhyaline fascia, commencing at the sub-costal nervule, crossing the wing and being continuous with a similar band on the posterior wings, which does not reach their inner margin. At the extremity of the cell of the anterior wings is a similar band, crossing them from close to the costa to the inner margin, not far from the anal angle; this band is continued on the posterior wings nearly to the third median nervule. Externally to this band the wings are fuscous. At its termination is a bright crimson transverse irregular band, extending to the inner margin, curved upwards at both its extremities. From this to the anal angle is a black patch. The tails are of a brilliant blue, are tipped with white, and have a faint white cloud at their base; the cilia also white at the anal angle. Below the blue colour of the upper surface is replaced by fuscous, the white marks more distinct; the base of the anterior wing has a crimson spot above the sub-costal nervure. Abdomen black, with a red line.

Hab. Bolivia, (Bridges).

Expansion of wings $1\frac{3}{4}$ inches.

In the collection of the British Museum.

For the above description of this new species I am indebted to Mr. E. Doubleday.

Sp. 8. *Erycina Iphinoe.*
Ancylaris Iphinoe, Hübner, Guyer, vol. 3.

I only know this species by the figure of Hübner in the volume above quoted.

Sp. 9. *Erycina Jurgensenii.* (Pl. XX. fig. 3.)

Wings above black-brown; the anterior with two transverse white bands, one broad, nearly central, slightly curving outwards and somewhat narrower towards the anterior margin, where it terminates in a crimson oblong spot; the other, between the band just described and the lateral margin, running nearly parallel to the former, somewhat curved outwardly, narrow, and terminating near the posterior angle. The posterior wings produced into a broad, rather elongate, obtuse diverging tail, with a strong tooth on the inner margin, and partly crossed by two white bands; the inner one broad, arising immediately under the broad band of the anterior wing, curving inwards, and terminating somewhat below the apex of the abdomen; the outer narrow, near and parallel to the exterior margin, terminating on the same level as the broader band, having also two crimson spots; one elongated, band-like, arising from the posterior termination of the broader band, from whence it curves upwards to the interior margin of the wing, which it reaches a little below the apex of the abdomen; the other nearly oval, placed about midway between the former and the base of the tail. On the interior margin of the wing, between the two crimson spots, is a small white spot; and there is also a faint white streak, running from the oval crimson spot, parallel with the inner margin of the tail, and terminating about midway along the outer margin; the sinuosities of the inner margin of the tail and the tips of the same are fringed with white. The undersides of the wings correspond in colouring to the upper. Head, antennæ, body, and legs black-brown.

Hab. Mexico.

Expansion of wings, $2\frac{2}{10}$ inches.

In my own collection.

This is a female, collected by Mr. Jurgensen, a Swedish gentleman, who lost his life while acting as natural history collector in Mexico, after whom I have named the species. It may possibly be the female of *Erycina Montezeuma*, hereafter described. Both were collected in the same country, and sent home in the same box.

Sp. 10. *Erycina Periander.*
Pap. Periander, Cramer, Tab. 188, C.

Hab. Surinam.

I only know this from the figure of Cramer, quoted above.

Sp. 11. *Erycina Calpharnia.* (Pl. XX. fig. 7 and 7 *a*.)

Wings above dark umber-brown; the anterior ones, each with a nearly central transverse broadish white band, somewhat curved outwardly, and narrowing towards the anterior margin. Posterior wings, each produced into a broad gradually tapering long tail, with a broad gradually attenuated white band, arising immediately under the band of the anterior wing, and running thence nearly parallel with the outer margin to a point a little below the termination of the abdomen, where the colour changes to orange, and the band is continued, in a much narrower and uneven way, to the interior margin of the tail, running close to and parallel with the margin for more than half its length. The wing is fringed with white externally, from the anterior angle to the extremity of the tail, and a patch of white fringe occurs near the anal angle. The undersides of the wings correspond in colouring with the upper-sides, except that the umber-brown colour, between the band and the body, changes to greyish-ash, and on the posterior wing a narrow white band inclines upwards from the commencement of the orange band to the base of the abdomen. The orange band is also partly discontinued, appearing as an elongated patch, and a narrow streak along the interior margin of the tail. Head and antennæ dark umber-brown. Thorax and abdomen dark umber-brown above; whitish-ash below. Legs whitish-ash.

Hab. ——?

Expansion of wings, $2\frac{3}{10}$ inches.

In the collection of Mr. Conrad Loddiges.

For a knowledge of this fine female, the largest of the tailed *Erycinas* which I have seen, I am indebted to Mr. C. Loddiges, who kindly lent me the specimen to describe. He is not aware from what part of the world it was obtained.

Sp. 12. *Erycina Aulestes.*
Papilio Aulestes, Cramer, Tab. 128 G.

Hab. Surinam. (Cramer.)

I am only acquainted with this from the figure given by Cramer, above quoted.

Sp. 13. *Erycina Glaphyra.* (Pl. XXI. fig. 3 and 3 *a*.)
E. Doubleday, Brit. Mus. Cat. p. 3.

Wings above black; the anterior, each with two transverse bands, one broad, placed about one-third the length of the wing from the base, curving outwards, and narrowing towards the anterior margin, bright yellowish-orange; the other yellowish-white, narrow, somewhat obscure, parallel to the former, and about midway between it and the lateral margin. The posterior wings each produced into a broad, somewhat elongated, rather obtuse diverging tail, sinuate on the anterior margin, with a broadish, central, bright, yellowish-orange band arising under the broad band of the anterior wing, and running thence longitudinally to a point somewhat beyond the apex of the abdomen, where it assumes a crimson colour, and, changing direction, proceeds to the interior margin of the wing, nearly at right angles to its previous course; also with a short, broadish, crimson, undulating band, with a white speck at the commencement, arising on the interior margin of the wing, a little above the base of the tail, and running diagonally across the latter to its outer margin, having a course nearly parallel to the inner margin; also with a faint white interrupted streak between the yellow band and the outer margin, with which it runs nearly parallel; and also having three white specks on the fringe of the outer margin of the wing, two specks on the fringe of the inner margin, and the tip of the tail the same colour. Undersides of the wings coloured and marked as the uppersides, except that the marginal bands are more decided and broader. Head, antennæ, body and legs black; the abdomen with two lateral yellow streaks, one on each side, and two faint white streaks on the underside.

Hab. Para. (Messrs. Wallace and Bates.)

Expansion of wings, $1\frac{6}{10}$ inches.

In my own Collection and that of the British Museum.

This is a female. The specimens that I have examined vary somewhat in size.

Sp. 14. *Erycina Pandama.* (Pl. XX. fig. 5 and 5 *a*.)
E. Doubleday, Brit. Mus. Cat. p. 3.

Above wings black, crossed near the middle by a transverse fascia, broad and slightly curved on the anterior wings, narrower and bent at almost a right angle on the posterior. This fascia is luteous on the anterior wings, and also towards the anterior margin of the posterior wings, and of a crimson hue from the disc of the wing to the inner margin. At the origin of the tail is an

obliquely transverse crimson fascia, which does not quite touch either margin. The cilia of the posterior wings are dotted with white. The under surface scarcely differs from the upper, except in the transverse band of tail having a small white patch at the termination on the inner margin. Head, thorax, abdomen, antennæ and legs black.

Hab. Bahia.

Expansion of wings, $1\frac{1}{2}$ inches.

In the Collection at the British Museum.

For the foregoing description I am indebted to Mr. E. Doubleday. It is made from a female.

Sp. 15. *Erycina Tedea.* (Pl. XXIII. fig. 1 and 1 *a*.)

Papilio Tedea, Cramer, Tab. 102 (A).

Zeonia Tedea, Morisse, Annales de la Societé Ent. de France. Vol. 6, p. 425.

Dark umber-brown; the anterior wings above with two transverse bands, one nearly central, broadish, well defined, pale yellow, —somewhat narrower, and curving inwards, as it approaches the posterior margin; the other narrow, obscure, dull yellow, commencing towards the apex, and thence curving outwards, runs in a waving line to the posterior angle, getting very faint as it approaches its termination; posterior wings each produced into a broad, obtuse, diverging tail, having two teeth on the outer margin, above with a pale yellow well-defined broadish band, commencing immediately under the broad band of the anterior wing, and running thence curves gently inwards, until it terminates in a point about midway between the external and internal margins of the wing, a little above the base of the tail; also with a dull yellow spot on the inner margin of the wing, a little below the apex of the abdomen, and a broadish, orange, undulating band, commencing with a white spot, on the inner margin of the base of the tail, and running diagonally across the tail to a point a little above the apex on the outer margin; also with a faint, dull, yellow streak parallel to the outer margin of the wing, on which are three white specks on the fringe; and there are three specks of the same colour, two on the inner margin, and one at the apex of the tail. Undersides of the wings with the same colouring and markings as the upper sides, with the exception of the marginal band of the anterior wings being broader and better defined, and the yellow longitudinal band of the posterior wings curving gently upwards at its extreme length, and terminating on the inner margin, under

the dull yellow spot of the upper sides. Head, antennæ and body black-brown. Abdomen with a yellow line on either side.

Hab. Surinam. (Cramer.)

Expansion of wings, $1\frac{6}{10}$ inches.

In the Collection of Mr. Conrad Loddiges.

For an opportunity of describing this rare insect I am indebted to Mr. C. Loddiges. No lengthened description from the specimen has before appeared. It has been only known up to the present time by the figure of Cramer. It is a female, and closely allied to the two females just described (*E. Glaphyra* and *E. Pandama*). Mr. Loddiges is not aware of the native locality of his specimen.

Sp. 16. *Erycina Lysippus*.

Pap. Lysippus, Drury, Vol. 1, pl. 22, figs. 3 and 4.
„ „ Cramer, Tab. 380 A.
Zeonia Lysippus, Morisse, Annales of the Ent. Soc. France, Vol. 6, p. 425.

Hab. Para. (Wallace and Bates.)

Expansion of wings,

In my own collection and that of the British Museum.

I retain this species among the true *Erycinas*, because other Entomologists have done so on account of its short obtuse tail, but it appears to me to belong to another group, and should not be placed here. The specimens from Para have the ground-colour darker, and the yellow bands broader and brighter, than is represented in the figures of Drury and Cramer.

Sp. 17. *Erycina Pyretus*. (Pl. XXI. fig. 4 and 4 *a*.)

Pap. Pyretus, Cramer, Tab. 144, A. B.
Pap. Melibœus, Godt.
Zeonia Melibœus, Morisse, Annales.
Erycina Julia, E. Doub., Brit. Mus. Cat.

Hab. Surinam. (Cramer.)
„ Bolivia. (Bridges.)

Expansion of wings, $1\frac{7}{10}$ inches.

In the Collection of the British Museum.

I have thought it desirable to give a figure of this species, that the differences between it and the following closely-allied species may be the more easily distinguished.

Sp. 18. *Erycina Julia.* (Pl. XXI. fig. 1 and 1 *a*, ♂ ; fig. 2 and 2 *a*, ♀.)

Male.—Black, having the anterior wings above with a narrowish, transverse, well-defined, nearly central, straight crimson band. The posterior wings each produced into a short, obtuse, almost straight tail, having an obtuse tooth on the inner margin, with a narrowish crimson band, commencing immediately under the band of the anterior wing, and running down the centre to a point a little below the apex of the abdomen, where it suddenly curves nearly at right angles to its former course, and terminates on the inner margin ; also with a large irregular crimson spot crossing the base of the tail, commencing nearly on the inner margin, with a small white speck, then running downwards, and getting gradually broader, suddenly rises again, and terminates near the outer margin with a hook-like point ; also having a pale brownish streak parallel to the outer margin, on which are four white specks on the fringe, with another on the tips of the tail, and another on the inner margin of the tail of the same colour. Undersides of the wings entirely shaded with brilliant metallic blue, with a largish round crimson spot on the posterior margin of the anterior wings, and another undulating crimson spot on the inner margin of the posterior wings, corresponding with the termination of the crimson band of the upper side, and a round white spot at the base of the tail, on the inner margin. Head, antennæ and body black. Legs black, with blue reflections.

Expansion of wings, $1\frac{5}{10}$ inches.

Female.—Black ; anterior wings above with two transverse bands, one well-defined, narrowish, crimson, nearly central, crossing the wing in a gentle curve inwards ; the other very narrow, obscure, yellowish-white, parallel to the former, and between it and the outer margin. Posterior wings produced each into a very broad, obtuse, much-diverging tail, sinuate on the interior margin, and slightly so on the outer margin of the wing, with two narrowish crimson bands; one arising under the crimson band of the anterior wing, and running down the centre to a little below the apex of the abdomen, there curves suddenly nearly at right angles to its former course, and terminates on the inner margin of the wing ; the other slightly undulating, crossing the base of the tail parallel to the bend of the longitudinal band, and about midway between the latter and the inner margin of the tail ; also having three white specks on the fringe of the outer margin of the wing, and the like number of white specks on the fringe of the

inner margin of the tail. The undersides of the wings coloured and marked as the upper sides, with the exception of the marginal band of the upper anterior wing being broader, well defined, and whiter, and the curve of the longitudinal band of the posterior wing running up the anterior margin quite to a point, and a yellow spot on the interior margin of the posterior wing, at the commencement of the transverse band. Head, antennæ and body black. Abdomen with a broad, yellow, lateral fascia on each side.

Hab. Para. (Messrs. Wallace and Bates.)

Expansion of wings, $1\frac{8}{10}$ inches.

In my own Collection and that of the British Museum.

This species, differing chiefly from *Pyretus* in the colouring of the underside of the wings and the shape of the crimson spot at the base of the tail, was first known by a specimen from Para, presented to the British Museum by Mr. J. P. G. Smith. Both sexes have been since sent home by Messrs. Wallace and Bates. This is the species which Mr. E. Doubleday intended to have named *Julia*, but by some error in the manuscript, the name *Julia* got affixed in the Catalogue of the British Museum to the true *Pyretus* of Cramer. I have much pleasure in carrying out in the name my friend's intentions.

Sp. 19. *Erycina Montezeuma*. (Pl. XXI. fig. 5 and 5 *a*.)

Black, with a dull purplish iridescence. The anterior wings above with a narrow, nearly central crimson band, and a very obscure narrow dull brownish band, running parallel to the former band and midway between it and the external margin. Posterior wings produced each into a shortish obtuse diverging tail, having an obtuse tooth on the inner margin, and two obtuse teeth on the outer margin of the wing; above with a narrow crimson band arising immediately under the crimson band of the anterior wing, and running down the centre to a point a little below the apex of the abdomen, where it curves suddenly upwards at an acute angle and terminates on the interior margin of the wing: also with a nearly oval crimson spot situate at the base of the tail about midway between the outer and inner margins, and a narrow band of brilliant blue spots running parallel to the outer margin of the wing and terminating at the oval spot: and also with three white specks on the fringe of the outer margin of the wing, and the like number on the fringe of the inner margin of the tail; the whole tail has a brilliant blue iridescence in the proper light. Undersides with two broad brilliant metallic blue bands, crossed by black nervures

corresponding nearly in position with the bands on the upper sides, the inner one the broadest and terminating before the apex of the abdomen; the posterior wings margined externally with brilliant metallic blue, with a crimson oblong spot on the inner margin corresponding with the portion of the band on the upper side, which curves upwards: also an oval crimson spot under the oval spot of the upper side, and an obscurely marked white spot between the latter and the inner margin. Head, antennæ, legs and abdomen black, the latter having a yellow line on either side.

Hab. Mexico. (Jurgensen.)

Expansion of wings 2 inches.

In my own Collection and that of the British Museum.

This fine species was discovered by Mr. Jurgensen. The description is from a male insect, and the female is unknown, if it be not the *Ery. Jurgensenii* before described.

Sp. 20. *Erycina Inca.* (Pl. XXI. fig. 6 and 6 *a*.)

Black. The anterior wings above with a broadish bright golden yellow transverse central band, curving inwards on approaching the interior angle. The posterior wings each produced into a short obtuse diverging tail, having above an ill defined blue patch, with two paler points at the base of the tail, the blue colour in certain lights extending over the surface of the tail; also four white specks on the fringe of the outer margin of the wing, as well as two specks of the same colour on the fringe of the inner margin of the tail. Undersides of the wings tinted with rich metallic blue, the black colour of the wings showing through at the nervures and forming also a broad band common to both wings; in the anterior one corresponding with the yellow band on the upper surface, and on the posterior wings running parallel to the outer margin nearly to the base of the tail, where it curves upwards and terminates on the anterior margin of the wing, having immediately above its termination, a little distance from the margin, a small round yellow spot, and immediately below a small oblong rather obscure white spot. There is also on the anterior wings a yellowish obscure spot near the base on the underside, which is not visible until the wing be well expanded. Head, antennæ, body and legs black. Abdomen with a pale yellow line on each side.

Hab. Mexico. Jurgensen.

Expansion of wings 2 inches.

In my own Collection.

This fine and very distinct species was discovered in Mexico by Mr. Jurgensen. He only sent home a single specimen, which is a male.

Sp. 21. *Erycina Chorineus.*
Pap. Chorineus, Cramer, Tab. 59 A.
Erycina Octavius, Godt.
Pap. Octavius, Fab.
Zeonia Octavius, Morisse.

Hab. Guiana. (Cramer.)

I only know this by the figure of Cramer; it is very distinct and easily known by the peculiar position of the crimson spot at the base of the tail.

Sp. 22. *Erycina Heliconides.*
Zeonia Heliconides, Swainson, Zool. Illus. pl. 111.

Hab. Brazil. (Swainson.)

Only known by the figure of Swainson above referred to.

Sp. 23. *Erycina Timandra.* (Pl. XXIII. fig. 2 and 2 *a*.)

Wings transparent, colourless; the anterior ones above with black nervures, and a black margin in shape of band surrounding each wing, except for about two-thirds of the posterior margin, the band being broader on the lateral margin: also with a black patch at the base of the wing, and a nearly central broadish transverse band of the same colour terminating a little before the posterior angle on the posterior margin. Posterior wings each produced into two tails, one short tooth-like on the anal angle, and the other long, narrow, nearly of equal width throughout, slightly diverging, placed at the termination of the lateral margin above, with the nerves black; a broad black band on the interior margin, a narrow band of the same colour on the outer margin, and a broadish black band running between the two, but nearer and parallel with the outer margin; all the bands uniting somewhat below the apex of the abdomen, and giving a black ground to the wing and tails below, except where it is partly crossed near the base of the tooth-like tail by a large crimson somewhat lunate spot, which arises on the exterior margin of the wing, and curving thence gently downwards crosses two-thirds the width of the wing, and a small white speck nearly on the outer margin at the termination of the crimson spot. The shorter tail is tipped with white and the longer tail fringed at the apex with the same colour,

and there is also an ashy blue tint on the upper surface of the latter in certain lights. Undersides of the wings the same as the upper, with the exception of a row of bluish white spots across the base of the tails immediately below the crimson spot. Head, antennæ, body and legs black.

Hab. Brazil.

Expansion of wings $1\frac{7}{10}$ inches.

In the Collection of the British Museum.

This species closely approaches to *Ery. Heliconides*, but differs chiefly in its smaller size, anterior wings less rounded on the exterior margin, and the shape of the crimson spot, with a white spot at its extremity on the outer margin. I have only seen one specimen, a male.

Sp. 24. *Erycina Xantippus*, Gray, An. King. pl. 102, fig. 1.
Zeonia Morissei, Bois., Annales Ent. Soc. France, vol. 6, pl. 14, fig. 7 and 8.
Zeonia Chorineus, E. Doubleday, Brit. Mus. Cat.

Hab. Brazil. Banda oriental. (Morisse).

In the Collection of the British Museum.

The original specimen, from which the figure for the "Animal Kingdom" was drawn, being in the British Museum Collection, there can be no doubt but that it is identical with the *Zeonia Morissei* of Boisduval above referred to. The specific name given in the "Animal Kingdom" must therefore stand good, having the priority. This is another nearly allied species to the two former ones, but may be easily distinguished, by there being two crimson spots in lieu of the crimson band at the base of the tails.

XL. *On a new Species of the Dipterous Genus* Ceria. *By* W. W. Saunders, Esq., F.L.S.

Ceria Daphnæus, Walker.

Catalogue of the *Diptera* in the British Museum, p. 537.

I have thought it desirable to give a figure (Pl. XXIII. fig. 7) of this interesting species, as it is the only one which has yet been discovered in the New World, and will form a good appendix to my notice of the genus *Ceria*, vol. iv. p. 63, of the Transactions of this Society. It was found by Mr. Gosse in Jamaica, and appears to be rare, as only a single specimen was sent home. The specimen is imperfect, wanting the antennæ.

XLI. *Diptera nonnulla exotica descripta.* *Auctore* J. O. Westwood, F.L.S., &c.

[Read 1st October, 1849.]

Order DIPTERA.

Division NEMOCERA.

Family TIPULIDÆ.

Sub-family MYCETOPHILIDES.

Genus Platyura.

Sub-genus, Platyroptilon, Westw.

Sub-genus novum *Platyuris* typicis affine, attamen antennis flabellatis distinctum. *Caput* mediocre, haud rostratum, oculis maximis subtus basin antennarum conjunctis: ocellos 2 magnos approximatos tantum vidi. *Os* indistinctum. *Antennæ* breves, 12-articulatæ, articulis brevibus, 3—11 singulatim ramum longum pilosum emittentibus, 12mo elongato. *Alæ* absque cellula parva sub-quadrata, vena 1ma longitudinali ante apicem ramulum parvum obliquum, ad costam extensum, emittente. *Pedes* satis graciles et elongati, posticorum tibiis calcaribus duobus acutis armatis, articulo 1mo longo et reliquis parum crassiori. *Abdomen* elongatum gracile.

Obs.—Individuum unicum, parum mutilum, tantum vidi.

Platyroptilon Miersii, Westw. (Tab. XXIII. fig. 3, and details.)

Piceum, obscurum, abdominis segmentis intermediis fascia lata basali lutea, alis fusco-tinctis, præsertim ad costam, venis regione costali magis obscuris, pedibus piceo-albidis, tibiis posticis obscuris.

Long. corp. lin. 3.

Habitat in Brasilia.

In Musæo D. Miersii.

Division BRACHOCERA.

Stirps TANYSTOMA.

Family ASILIDÆ.

Sub-family DASYPOGONIDES.

Genus Euscelidia, Westw.

Genus novum, femoribus posticis clavatis, pilosissimis, cæteris generibus hujus familiæ omnino distinctum.

Caput mediocre, transversum, thorace parum latius. *Proboscis* porrecta acuta, capitis longitudine. *Palpi* breves, seta longitudinis proboscidis terminati, facies parum obliqua, epistomate barbato. *Antennæ* breves, graciles, articulo 3tio duobus basalibus conjunctim fere duplo longiore, apice acuminato, stylo brevi, setiformi, sub-biarticulato. *Thorax* brevis ovatus. *Abdomen* longum, gracile, clavatum, basi hirsutum. *Alæ* subangustæ, vena externa cellulæ 2dæ posticæ marginem posticum alæ paullo sub apicem attingente; cellula discoidali basi acuminata, venis quatuor longitudinalibus emittentibus. *Pedes* 4 antici graciles. *Femora* postica clavata, valde hirsuta, tibiis posticis elongatis subrectis; tarsis omnibus raptoriis, sc. articulis subtus spinosis, ultimo majori subincurvo, unguibus valde elongatis et acutis: pulvillis nullis.

Euscelidia rapax, Westw. (Tab. XXIII. fig. 4, and details.)

Nigra, lateribus thoracis griseis; abdomine fulvo fasciato; femoribus 2 posticis tibiisque fulvis.

Long. corp. lin. $5\frac{1}{2}$; expans. alar. lin. $8\frac{1}{2}$.

Habitat in Africa tropicali? In Mus. nostr.

Caput nigrum, facie pilis setisque albido-sericeis dense vestita, occipite luteo-villosum. Antennæ piceæ; thoracis dorsum nigrum, nitidum, transverse striolatum, lateribus scutelloque albido-luteo villosis. Abdomen nigrum, fulvo-varium, genitalibus rufescentibus. Alæ fuscescentes flavido parum tinctæ, venis nigris. Pedes antici fulvi; 2 intermedii femoribus in medio et apice extremo nigris, tibiis piceis basi fulvis; margineque interno etiam fulvo; 2 postici fulvi, femoribus fulvo-pilosis; ante medium fascia brevi nigra; tarsis omnibus nigris, basi fulvescentibus, setis crassis nigris subtus armatis. Haustellum nigrum. Subtus thorax lateribus albido-sericeis, abdomineque pallide luteo-fulvo.

Sub-family LAPHRIIDES.

Genus ATOMOSIA, Mcq.

Atomosia purpurata, Westw. (Tab. XXIII. fig. 5, and details.)

Purpurea punctatissima, alis fusco-hyalinis, pedibus rufis; tibiarum apicibus tarsisque nigris.

Long. corp. lin. 4; expans. alar. lin. 6½.

Habitat in India Orientali. D. Boys. In Mus. nostr.

Hoc genus, e speciebus Americanis adhuc compositum, nunc incolâ Indiæ Orientalis pereleganti ditatum. Hæc species nova *Chrysidibus* analoga colore, corpore punctato, necnon abdomine basi quadrato, metathorace latiori. Venæ alarum ut in speciebus typicis Americanis singulariter dispositæ; venis transversis posticis cellulæ discoidalis et quartæ posticæ eadem linea positæ.

Caput inter oculos supra valde impressum, tuberculo vel cornu brevi erecto, ocelligero, apice bisetoso armatum. Facies argenteo-sericea, obtuse angulata, angulo longe setoso. Proboscis fere perpendiculari. Antennæ capitis longitudine. Thorax brevis, fere rotundatus, supra nitidus, punctatissimus. Scutellum cæruleum, nitidum, tuberculis duobus rufis callosis utrinque ad basin ejus instructum. Abdomen elongatum, thoracis latitudine, lateribus fere parallelis; segmentis basi constrictis. Alæ fusco-hyalinæ, fulvo-tinctæ, venis obscuris. Pedes rufi, longe setosi, tibiarum apicibus tarsisque nigris.

Family BOMBYLIIDÆ.

Genus SYSTROPUS, Weid.

(Vide monographiam nostram in opere periodico, Guerinio edito, sub nomine "Magasin de Zoologie," anno 1842, ubi species plurimas hujus generis persingularis descripsi.)

Systropus Ophioneus, Westw. (Tab. XXIII. fig. 6.)

Niger, thorace flavo-maculato, abdomine obscure fulvo, striga dorsali nigra, femoribus posticis ferrugineis; tibiis posticis basi et apice pallidis, tarsis posticis nigris.

Long. corp. lin. 7; expans. alar. lin. 9½.

Habitat in India Orientali. D. Boys. In Mus. nostr.

S. Eumenoidi (Westw. in Guér. Mag. de Zool. 1842, Ins. pl. 90) proxima, at magis obscura. Facies angusta, flava, argenteo-sericea. Concavitas postica capitis nigra, griseo-sericea. Antennæ nigræ, basi extrema articuli 1mi pallida.

Proboscis elongata, nigra. Thorax niger, maculis duabus transversis ad angulos anticos, duabus subtriangularibus ante basin alarum et duabus minutis cuneatis ad basin internam alarum. Scutellum nigrum, punctis duobus lateralibus minutis flavis; metathorax flavo-bimaculatus. Abdomen elongatum, compresso-clavatum, curvatum, fulvum; segmentis apicalibus rufescentibus, vitta tenui dorsali nigra. Alæ pallidæ fuscescenti-hyalinæ, costa magis fulvescenti. Halteres flavi, macula ante apicem nigra. Pedes 4 antici flavi, femoribus basi apiceque tarsorum, nec non fascia in medio tibiarum intermediarum obscuris. Femora 2 postica ferruginea; tibiæ basi ferrugineæ, medio nigræ, apice flavæ; tarsi nigri.

Stirps ATHERICERA.

Family SYRPHIDÆ.

Genus Ceria. Fabr.

(Vide monographiam hujus generis Dom. W. W. Saunders, in hoc opere, tom. iv. p. 60, pl. iv., olim editam, ubi species undecim descripsit et accurate delineavit. Speciei alteræ, in Musæo Britannico asservatæ, cel. Walkerio nuper descriptæ, hic desiderio Dom. Saundersii figuram ostendo, iconographiam generis completam efficientem.)

Ceria Daphnæus.

(Walker, List of Specimens of Dipterous Ins. in Coll. Brit. Mus. p. 537.)

(Tab. XXIII. fig. 7.)

" Ferruginea, flavo-fasciata nigroque varia, pedibus fulvis, femoribus nigris, alis dimidio costali fulvis."—*Walker*, l. c.

Long. corp. lin. $7\frac{1}{4}$; expans. alar. lin. $12\frac{1}{2}$.

Habitat Jamaica. In Mus. Britann.

Obscure fulva seu ferruginea, parte postica capitis fulva, pedicello antennarum nigro. Thorax angulis anticis punctisque duobus parvis approximatis flavis, lateribus macula nigra conica notatis, margine postico dorsali flavo, fascia inter alas scutelloque nigris. Abdomen segmento 1mo flavo, macula postica nigra: 2ndo et 3tio linea transversa subapicali nigra, margine ipso flavo. Pedes fulvi, femoribus basi nigris, tibiis basi flavidis. Alæ hyalinæ, dimidio costali fulvo.

Obs.—Speciem alteram, *Ceria scutellata* nominatam, descripsit cel. Marquartius in opere " Diptères Exotiques," tom. 2, par. 2, p. 10, ex Algeria allata Domino Lucas, et in opere hujus auctoris de Insectis Algericis delineata.

Family MUSCIDÆ.

Genus Achias, Fabr.

Hoc genus optimæ notæ, multos per annos e specimine unico Bosciano, hodie in Musæo Parisiensi, at male conservato, cognitum est. Hoc insectum Javanicam, curâ Guerinii, monente Wiedemanno, delineatum est in opusculo, anno 1830 Kiliæ Holsatorum edito, cui titulus "Achias Dipterorum Genus a Fabricio conditum illustratum novisque speciebus auctum," &c. à Chr. Rud. Guil. Wiedemann, cum descriptione gallica Latreillii, auctori communicata.

Hæ novæ species attamen generibus aliis pertinent, scil. *Plagiocephalo* (*P. lobularis*, ex Brasilia); *Zygothricæ* (*Z. dispar*, ex Brasilia); et *Diopsi* (*Diopsis* (*Sphryracephala*) *brevicornis*, ex America septentrionali).

Speciem secundam pulcherrimam *Achiæ*, etiam ex insula Java celeberr. T. Horsfieldio allatam, descripsi et delineavi in opere meo "Cabinet of Oriental Entomology," p. 38, tab. 18, f. 4. Mas ibi delineatus; nunc vero partes anatomicas ejusdem insecti cum figura capitis fœminæ addo et speciem tertiam giganteam describo. Utrumque sexum hujus tertiæ speciei mecum amicissime communicavit Dom. W. W. Saunders, inde patet pedunculos oculigeros in fœmina hujus generis multo breviores quam in maribus, quod etiam in *A. Horsfieldii* obtinet.

Hæ tres genuinæ species generis *Achiæ* inter se, forma capitis et corporis nec non dispositione venarum alarum discrepant, et forsan totidem subgenera systemate hodierno constituunt. Hunc laborem aliis attamen relinquo, sectiones literis notatas hic tantum indicans:

A. Venæ alarum rectæ.
   a. Corpus breve crassum. *A. oculatus.*
   b. Corpus cum pedibus elongatum. *A. Ichneumoneus.*

B. Venæ anticæ alarum curvatæ. *A. Horsfieldii.*

Achias Ichneumoneus, Westw. (Tab. XXIII. fig. 8, and details.)

A. fulvus, capitis pedunculis nigro-vittatis, alis nitidissimis, flavidis, venis fulvis.

Long. corp. lin. 7—9½; expans. alar. lin. 12½—15½.

Habitat in India Orientali.

In Mus. Saunders ♂ ♀; Mus. Westw. ♂. D. Boys.

Corpus totum maris læte fulvum, vitta antica et postica pedunculorum oculigerorum nigris exceptis. Corpus elongatum.

Caput parvum. Abdomen parum ante medium angustatum. Alæ nitidissimæ flavidæ, venis fulvis, pseudostigmate in medio costæ fulvo, pedunculi capitis in nostro specimine maris fere corporis longitudine, in alio individuo vix capite cum thorace longiori.

Fœmina differt statura robustiori, pedibus brevioribus, abdomine magis clavato, apice obscuro, pedunculis oculorum vix longitudine thoracis et crassioribus.

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Tab. XXIII. Fig. 3. *Platyroptilon Miersii* magn. auct.: 3 *a*, caput antice visum, cum antennis; 3 *b*, caput e latere visum; 3 *c*, antenna; 3 *d*, ala; 3 *e*, pes anticus; 3 *f*, pes posticus.

Fig. 4. *Euscelidia rapax* magn. auct.: 4 *a*, caput e latere visum; 4 *b*, antenna; 4 *c*, articulus ultimus tarsorum, cum unguibus.

Fig. 5. *Atomosia purpurata* magn. auct.: 5 *a*, caput antice visum; 5 *b*, idem e latere; 5 *c*, antenna.

Fig. 6. *Systropus Ophioneus* magn. auct; 6 *a*, caput e latere visum.

Fig. 7. *Ceria Daphnæus* magn. auct.

Fig. 8. *Achias Ichneumoneus* ♂ magn. auct.: 8 *a*, caput antice visum pedunculis truncatis; 8 *b*, idem e latere; 8 *c*, antenna; 8 *d*, caput fœminæ.

Fig. 9. Partes *Achiæ Horsfieldii*: 9 *a*, caput maris antice visum; 9 *b*, idem e latere; 9 *c*, antenna; 9 *d*, ala; 9 *e*, caput fœminæ.

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TO

VOLUMES I. TO V.

GENERAL INDEX

TO

VOLUMES I. TO V.

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PROCEEDINGS

OF

THE ENTOMOLOGICAL SOCIETY

OF LONDON.

4th January, 1847.

The Rev. F. W. Hope, F.R.S., President, in the Chair.

DONATIONS.

The Calcutta Journal of Natural History, Nos. 17—24. Presented by the Editor, Dr. MacClelland, Corr. M. E. S.

Monographie des Coléoptères Phytophages. Vol. I. By M. Theodore Lacordaire, the Author thereof.

The Agricultural Magazine for December, 1846. By the Editor.

The Naturalist's Almanack for 1847. Presented by Mr. Van Voorst, the Publisher.

G. A. Gilbert, Esq., Honorary Secretary of the School of Arts at Port Philip, was ballotted for and elected a Corresponding Member of the Society.

The President then stated that the meeting had been specially summoned to take into consideration the proposed alterations in, and additions to, the By-Laws, of which due notice had been given at the previous meetings of the Society. The By-Laws were thereupon revised seriatim, and various modifications therein and additions thereto were adopted by the Society; which were ordered to be printed for distribution among the members.

25th January, 1847.

The Rev. F. W. Hope, F.R.S., President, in the Chair.

This being the Anniversary Meeting of the Society,—Captain Parry, T. Tatham, E. Doubleday, and W. Spry, Esqrs., Members of the previous Council, were removed therefrom, and G.

Newport, J. F. Stephens, J. J. Weir, and W. F. Evans, Esqrs., were elected in their stead; and

W. Spence, Esq., was elected President;

W. Yarrell, Esq., Treasurer; and

Messrs. Westwood and Evans, Secretaries.

The President delivered an extemporary address on the state of the Society, and its proceedings during the past year; whereupon it was resolved, that a vote of thanks should be given to him for his services as President, and for the uniform support he had afforded to the Society.

Votes of thanks were also passed to the other officers.

1*st February*, 1847.

W. Spence, Esq., President, in the Chair.

Donations.

The Athenæum for May, September, October, November and December, 1846. Presented by the Editor.

The Agricultural Magazine for January, 1847. By the Editor.

Notes on the Transformations of *Akis punctata*, and the genus *Donacia*. By M. Mulsant, the Author thereof.

Various insects from the neighbourhood of Cracow. By Percy N. Hart, Esq.

Edwin Shepherd, Esq., of Fleet Street, London, was balloted for and elected an Ordinary M. E. S.; and C. A. Wilson, Esq., of Adelaide, South Australia, was elected a Corresponding M. E. S.

The President addressed the Society, returning thanks for his election as President, and nominated W. Yarrell, A. Ingpen, and J. Walton, Esqrs., for the Vice-Presidents for the ensuing year.

Mr. Edward Doubleday exhibited a box of Lepidopterous insects from Caraccas, recently received from Mr. Dyson, containing many new and interesting species, especially a new species of *Papilio*, which presents all the appearance of a large black and orange *Heliconia*, of which other analogies amongst the moths were also exhibited; also a monstrous specimen of *Glaucopis bellatrix*, having the apex of the wing double.

Mr. Wollaston exhibited the female of *Jumnos Ruckeri*, Saund., of which the male only had been hitherto known; also a specimen

of a *Cetonia* from the Himalayas, having the pronotum divided into two lobes, being constricted longitudinally nearly into two lateral halves.

Mr. Westwood exhibited drawings of *Papilio paradoxus*, from a specimen in the British Museum; and specimens of an apparently distinct species, from the collection of Mr. Harrington; and a female of an allied new species analogous to *Euplœa*, from the collection of the East India Company, communicated by Dr. Horsfield.

Captain Parry exhibited a small collection of exotic *Coleoptera*, containing many new and remarkable forms; also a specimen of *Papilio Boisduvallianus*, from the collection of M. Imhoff of Basle.

Mr. Griffith exhibited a number of beautiful drawings of British Lepidopterous insects executed by Miss Elizabeth Gorr of Worthing.

A Memoir on a new species of British *Tortricidæ*, by J. W. Douglas, was read.

Also Notes on Indian Locusts. By Dr. W. L. M'Gregor and Captain Edwardes. Dr. M'Gregor states that two well marked *varieties* or *species* of locusts had visited the north-western provinces of India. The most common kind is of a yellow colour, the other of a red or brick-dust; the wings of the latter being grey, spotted with black; the yellow is larger than the red locust, and the legs of the former are stronger and longer, but their numbers are insignificant when compared to those of the red locusts which visited the north-western provinces of India during the past year. A very large flight of the yellow locusts overspread the north-western provinces in 1834, committing great destruction on the crops; their larvæ appeared in October, and in November they were cleared off by flocks of that useful bird the *Mina paradisea*. Captain Edwardes suggests that Dr. M'Gregor alludes to a different yellow locust from the one which he had noticed, a drawing of which was laid before the Society by the Rev. F. W. Hope. Dr. M'Gregor distinguishes the red one from the yellow, by saying that the latter has grey wings spotted with black, leaving the inference that the yellow ones have not such coloured wings, whereas every yellow locust in the great flight observed by Captain Edwardes had the wings exactly similar to those of the red one. Moreover the general average size of the yellow locusts which he had observed was smaller than that of the red ones instead of larger.

Description of the gall-like nest of an Australian species of *Buprestidæ*. By W. W. Saunders, Esq.

Notes on the habits and description of a new Australian species of *Oiketicus*. By W. W. Saunders, Esq.

Mr. Westwood brought before the notice of the Society a recent publication on the potatoe disease by Mr. Smee, in which the disease is exclusively attributed to the attacks of a species of *Aphis*. This subject he considered as one of too great importance to allow such a fallacy to be disseminated without being checked; the well known nature of the operations of the *Aphides* on other plants being of a totally different kind from the potatoe disease, whilst the facts which have been recently observed, of the occurrence of the disease without the presence of a single *Aphis*, completely disproved a theory which its author is nevertheless endeavouring to promulgate with unceasing pertinacity. Mr. Westwood's statements and opinions were supported by the remarks of the President as well as by Messrs. J. F. Stephens and E. Doubleday.

March 1*st*, 1847.

W. Spence, Esq., President, in the Chair.

Donations.

Concours pour de bonnes Observations sur les Insectes nuisibles à l'Agriculture. 8vo. A Report presented to the Societé Royale et Centrale d'Agriculture. By M. Guérin Méneville.

The Agricultural Magazine for February. By the Editor.

Douglas Jerrold's Newspaper for the preceding week. By the Editor.

Annual Address delivered to the Berwickshire Naturalists' Club by R. Embleton, Esq. By the Club.

The 86th Part of Illustrations of British Entomology, completing the work. By J. F. Stephens, Esq., the Author thereof.

The new edition of the Introduction to Entomology, in 2 vols., by Messrs. Kirby and Spence. By W. Spence, Esq.

Four Specimens of *Nonagria crassicornis*. By Mr. Wing.

Exhibitions, Memoirs, &c.

Captain Parry exhibited a specimen of an *Erotylus*, from various portions of the body of which a number of slender vegetable appendages had been produced, which Mr. W. W. Saunders referred to the genus *Clavaria*.

Mr. Gutch exhibited an extensive collection of European *Lepi-*

doptera, including a specimen of the very rare *Ismene Helios* from Bokhara, which Mr. Doubleday referred to the genus *Parnassius*, agreeing therewith in the general arrangement of the veins of the wings and spur of the anterior tibiæ, although the palpi were rather more elongated and the hind wings marked beneath as in *Pontia Daplidice*, with which it also agrees in the general form of the wings.

Likewise a number of minute *Coleoptera* very carefully set out upon small square pieces of talc by M. Waga of Warsaw, and so arranged, by sticking a number of pieces of talc on one pin, as to pack up in very small compass. Likewise a number of Caterpillars very skilfully preserved by M. Graeff of Berlin (*Jerusalemme Strasse*, No. 18), and sold at very reasonable prices.

Mr. Westwood exhibited specimens and drawings of the Cochineal insect in its various states, which he had received from Mr. Augustus Faber, by whom it had been brought from Madeira. He had ascertained that its habits were unlike those of the ordinary *Coccidæ*, as the females brought forth their young alive, and which were not deposited beneath the body; moreover the male pupæ were enclosed in a bag-like cocoon with the lower end open, out of which the imago escapes backwards with the wings laid over the head; thus as well as in other respects warranting its generic separation as proposed by him in his "Introduction to the Modern Classification of Insects." A memoir had been lately published in the Pharmaceutical Journal on this insect, in which various erroneous observations had been made. In reply to a question by Mr. Newport, Mr. Westwood observed further that the circumstances which he had detailed took place in the ordinary temperature of the atmosphere during the preceding summer and autumn, the plants having been kept in a chamber without a fire.

The President read an extract from a letter from R. Stewart, Esq., one of the Members of the Torquay Natural History Society, on the subject of exchanges of Insects to be made between the Societies; whereupon some observations were made by Messrs. Saunders, Douglas and Doubleday as to the mode adopted by the Botanical Society for distributing their duplicates amongst the members, with a view to the adoption of a similar plan in this Society, which Mr. Saunders urged especially with regard to English Insects.

Mr. Newport exhibited specimens of the transformations of the genus *Meloe*, viz. the larvæ in the earliest stage of *M. violaceus*, the full grown larvæ, the nymph and imago of *M. cicatricosus*, which latter he had reared. In their earliest stage the larvæ of

M. proscarabæus and *violaceus* are identical with the insects found on *Nomadæ*, &c. The change from the active habits of the young to the inactive full grown larvæ was noticed, and it was stated that the limbs became gradually shortened by the claw being thrown off at each change. In reply to an observation by Mr. Westwood, that the full grown larva had been described by Geoffroy, (Hist. Ins. i. 377,) Mr. Newport stated that Geoffroy had mistaken the larva of *Timarcha tenebricosa* for that of *Meloe*. Mr. Newport further stated that he had counted as many as 2109 eggs in each ovary of a female *M. violaceus* for a first deposit; and that there were eggs in an immature state for two or three more layings, so that the whole number could not be less than 10,000: the young larvæ are found in flowers of low plants, such as the dandelion, buttercup, &c., but the eggs are deposited at the roots of grass and are of yellow colour. Mr. Westwood stated, however, that on one occasion, whilst collecting in Coombe Wood, upon beating a broom into his sweeping net he found an immense number of minute larvæ of a *Meloe*, many of which, by crawling upon his person, produced a most violent irritation for a short time.

Mr. Douglas stated that *Sphinx celerio* and *convolvuli* had been as abundant in France during the last season as in England, as stated in the French "Annales:" and Mr. Westwood stated that near Canterbury the latter had been so abundant that a friend of his had captured as many as five in his net at once.

Mr. Spence read an extract of a letter from G. H. K. Thwaites, Esq., dated 18th December, 1846, respecting the larvæ of *Tinea granella*, of which he had given a series of details at a former meeting. Mr. Thwaites stated that in collecting some larvæ on that day he had observed that instead of burrowing into the wood of the granary beams, &c. many of them had made their hybernacula by fastening grains of corn to the sides of the wall. This had occurred in a room where a bulk of corn had been recently removed and the walls had not been kept clean.

Mr. Spence added some observations on the interest thus shown in the insects modifying their habits under certain, in this case unknown, circumstances.

Mr. Waterhouse alluded to the hybernation, in the larva state, of *Cossus*, and Mr. Doubleday to that of the *Tenthredinidæ* and many *Tortricidæ* and *Tineidæ* under similar circumstances.

5th April, 1847.

W. Spence, Esq., F.R.S., President, in the Chair.

Donations.

Transactions of the Zoological Society of London. Vol. iii. part 4.

Proceedings of the same Society. July to November, 1846, and index. Presented by that Society.

Journal of the Royal Agricultural Society. Vol. vii. part 2. Presented by that Society.

The Agricultural Magazine for March, 1847. By the Editor.

A Treatise on the Potatoe Disease. By J. Parking. Presented by the Author.

Mr. Westwood called the attention of the Society to the last mentioned work, in which Mr. Smee's views were repudiated; and at the same time took occasion to allude to the fallacious opinions that the potatoe disease was attributable to insects, which had so extensively gained ground even among well informed persons, mentioning as an instance thereof that no fewer than four of the bishops who had preached on the recent fast-day had alluded to insects as its cause. He likewise referred to the equally fallacious proposal to destroy insects injurious to vegetables in vast numbers, by means of galvanized wires drawn over the fields or plants infected with the insects, which was founded on the plan of deterring slugs from attacking plants by galvanic rings. Messrs. Stephens and Ingpen also mentioned other instances of the disease of the potatoe having been attributed to insects, and Mr. Spence alluded to the necessity which was thus clearly proved to exist for making the study of natural history, and especially of Entomology, a branch of education.

A note was read by F. Walker, Esq., with prospectuses of his proposed work on the *Aphides*, and stating that the *Aphis vastator* of Smee was a distinct species.

Mr. F. Bond exhibited a specimen of *Graphiphora tristigma*, taken at Darenth at the end of June last; also a species of *Noctuidæ*, new to Britain, taken at Yaxley Fen at the end of July.

Mr. Ingpen exhibited some cocoons apparently of a *Tinea* or *Yponomeuta*, which had been found under boards lying upon sand, and which were externally covered with grains of sand.

Mr. Westwood exhibited a new species of the singular dipterous genus *Achias* from Java, belonging to the collection of the East India Company.

Mr. W. W. Saunders exhibited a bottle of capsicum, portion of a large quantity received by the East India Company from Bombay, which was found to be greatly infested by *Lasioderma testaccum*, Steph., a small beetle belonging to the family *Ptinidæ*, which is also stated by Mr. Westwood occasionally to infest Schumach, which it deteriorates to a great extent (Introduction to Modern Class. of Insects, vol. i. p. 272). Cayenne pepper is also stated by Messrs. Kirby and Spence to be subject to the ravages of *Anobium paniceum*, Linn., (*testaceum* of Marsham,) probably mistaken by them for the former insect, which it greatly resembles.

Mr. Saunders also exhibited living specimens of two beautiful species of *Bruchus*, feeding upon leguminous seeds received by Dr. Royle from the Himalayas.

Mr. Westwood communicated a letter from Mr. Barnes of Bicton Gardens, noticing various injuries produced by insects, especially mentioning that some early sown beans had been found to have the stems bored by an insect from the base to the level of the surface of the ground. Specimens of the insects proved to be *Sitona lineata*, which is well known to gnaw the edges of the leaves of beans. Mr. Spence, therefore, doubted whether this species was the real cause of the mischief, and stated that he believed that the larvæ of *Sitonæ* reside in galls at the roots of beans, which a friend had observed to be infested with root-galls at Holderness in Yorkshire, and, further, that when the crops were reaped numbers of *Sitonæ* were found. Mr. Walton stated that *Otiorynchus tenebricosus* is very injurious in gardens, especially in Dorsetshire.

Descriptions of some new Australian *Chrysomelidæ* were read by W. W. Saunders, Esq.; also

Description of a new Species of *Paussidæ* from Port Natal, by J. O. Westwood, Esq.

Extracts from a letter received by Mr. Ingpen from Mr. C. A. Wilson of South Adelaide, dated 9th September, 1846. He considers that the smaller species found near Adelaide is *Cerapterus MacLeaii*.* Mr. Westwood's figure in the Entomological

* [The figure referred to by Mr. Wilson represents *Cerapterus piceus*. *C. MacLeaii* is distinguished by a redder colour, and by having the outer angles at the tip of the tibiæ very acute. See Arcana Ent. ii. pl. 50, fig. 3 (*C. piceus*) and 4 (*C. MacLeaii*). The species, 8 lines long, is doubtless a new one.—*J. O. W.*]

Society's Transactions, Vol. II. Pl. X. fig. 7, is exactly like it in shape and size, shown as usual by the right hand line; but the species in all he had found was of a lighter hue, but this is not enough he should think to allow it to be considered a different species: it is more like *Paussus ruber*. Six specimens of this insect have now been found, and all within the last four years, of which he and the younger members of his family had found five. The remaining one was in the possession of Mr. Hall. All were found under dry cow-dung, and in the spring. All his specimens having been taken in October except the last, the fifth, which he had just discovered (20th June) below the North Adelaide Hills under cow-dung as before, he was much surprised to discover it at this time in the middle of the present winter, the severest and wettest they had yet had. It was softer, and the elytra more pliable than the others were, perhaps from the dampness of its retreat or its late assumption of the imago state. All the species of this family appear to be very small. He had not seen the account of the others described by Mr. Westwood, but of those figured in the Transactions, the Australian one seems to be the largest. He had found there one other species of this singular family, much more rare, as only two had been discovered; the first by a friend about September last (1845), and the other he discovered in the following month under decayed and damp weeds on the ground. It is precisely of the same figure and colour as the other species, but cannot be the same, unless it is of a different sex, and the sexes, as in some other insects, are extravagantly disproportionate. It is about 8 lines long, the other being 5 lines. If the other *Paussidæ* known are no bigger than those in the Transactions this species must stand at the head of them with regard to size, and might be named, if not before known, *Ceraptcrus major* or *maximus*. The other specimen of this fine insect he had lately purchased. Of the smaller kind he gave one to Mr. Fortnum when he left the colony for England, who said he should give it to Mr. Hope.

Extracts from a letter received by Mr. Spence from Mr. Thwaites, stating that he had been informed by Mr. Broome, M. E. S., that the truffle hunters in the neighbourhood of Salisbury assure him that the beetles which feed on the truffle (*Leiodes, sp.*) emit a phosphorescent light like a glow-worm. Mr. Thwaites had however suggested that the light was produced by a species of *Scolopendra*, which always occurs where truffles abound. Mr. Newport stated that the luminosity of the *Scolopendra electrica* only occurs in the autumn during pairing time.

Mr. Spence read some observations upon the popular notion that cold winters are effective in destroying insects, the accuracy of which he had long doubted. In the spring of 1814, when a continued severe frost of nearly three months froze over the Thames so as to allow an ox to be roasted on the ice, one of the first things which he observed was a numerous collection of the caterpillars of the gooseberry-moth (*Abraxas grossulariata*), under the rim of a large flower-pot in his garden at Drypool near Hull, which had been exposed out of doors to the full severity of the cold, all perfectly alive and active, a fact which he thought worth communicating to the Horticultural Society through a letter to Sir Joseph Banks. This opinion, as to the little injury done to insects by mere cold, he perceived was also entertained by the Rev. Leonard Jenyns, in his very valuable and interesting "Observations in Natural History;" that writer thinking it likely that mild winters are generally more fatal to them, as being usually attended by much rain, which finds its way into their most retired hybernacula and drowns them in large numbers. Mr. Jenyns concludes his remarks on this head by suggesting that "it would be worth inquiring whether collectors of insects find their harvest in summer depending at all upon the character of the preceding winter, or at least upon its having been wet or dry."—p. 226. It is to this suggestion that Mr. Spence begged to draw the attention of the members, as the late severe winter afforded so good an opportunity of testing the accuracy of the popular notion, and he trusted that the members of the Society would observe when collecting whether insects were less numerous next summer than usual, and would communicate the result to the Society, one of the most important objects of which is to collect and publish facts that may refute or confirm prevalent opinions like that in question. In a subsequent part of his work Mr. Jenyns remarks (p. 229—231) that he never remembers such a dearth of insects, even of the commonest species (except the cabbage butterfly), as in the summer of 1845. It is well worth investigating, by reference to meteorological tables, whether this dearth was owing to the wet or cold of the preceding winter, or, as Mr. Jenyns seems inclined to believe, to the wet, cold, and cloudy summer itself. Mr. Stephens observed, in confirmation of these opinions, that he had noticed that hard dry winters were generally followed by great quantities of insects in the following season. Mr. Saunders also stated that he had found the larva of a species of *Noctua*, feeding unhurt and at large on *Rumex acetosella*, the day after the late frost broke up. Mr. Ingpen had also found that of *Arctia caja*

immediately after the frost. Messrs. Douglas and Weir alluded to the abundance of Lepidopterous larvæ and the scarcity of *Hymenoptera* during the past year. And Mr. Newport stated that some insects which are maintained at an uniform high temperature do not undergo the changes at the usual time, as he had observed that larvæ of *Anthophora retusa*, when brought indoors in October, did not undergo their transformations to pupæ till the following July, several months after the ordinary time of their appearance.

3d May, 1847.

A. Ingpen, Esq., V.P., in the Chair.

Donations.

Annales des Sciences Physiques de la Soc. Roy. de Lyons. Tom. 8. Presented by that Society.

Entomologische Zeitung of the Entomol. Verein of Stettin. Vol. 7, for 1846. By that Society.

The London Geological Journal, No. 2, by E. Charlesworth, Esq., the Editor.

An Essay on the Wheat Fly of North America by Dr. Asa Fitch. By the Author.

Agricultural Magazine for April, 1847. By the Editor.

Annals of the Lyceum of Nat. Hist. of New York. Vol. 4, Nos. 6 and 7. By Major Leconte.

Notice of James Crowther, a humble Botanist and Entomologist, from Chambers's Journal. By W. Spence, Esq.

Description of *Broscosoma*, a new Genus of *Carabidæ*, by M. Putzeys of Brussels, 8vo., 1846. By the Author.

A set of Engravings illustrative of the Cultivation and Preparation of Silk by the Chinese. By the Rev. F. W. Hope.

Specimen of a gum-like substance found in Ant's nests in Poland. By Miss Loudon.

C. D. E. Fortnum, Esq., was ballotted for and elected an Ordinary Member of the Society, and M. Gray of St. Petersburgh was elected a Corresponding Member.

Exhibitions, Memoirs, &c.

Mr. F. Bond stated that he had captured a very fine specimen of *Vanessa Antiopa* at Kingsbury on the 10th April, hovering over nettles.

Mr. Douglas exhibited specimens illustrating the natural history

of *Talæporia cembrella* and *Incurvaria masculella*. The pupa case of the former had been found on a wooden fence at Penge, and the moth appeared in April.

Mr. F. Smith exhibited a drone and queen of the hive bee, which had been captured in copula on the ground about two yards in front of the hive by a friend. The female was very pale in colour, evidently from having only recently arrived at the perfect state, and the abdomen was not larger than that of an ordinary worker, in consequence of the ova not having been yet developed.

Mr. Newport stated that he had found a drone near a hive wanting the male organs, which had doubtless resulted from an act of copulation with a queen, and Huber had noticed the same fact.

Mr. Edward Doubleday communicated the discovery which he had recently made in a species of *Syntomidæ*, allied to *Glaucopis*, but with transparent wings (*Læmocharis?*) of a structure analogous to the drum of the *Cicadæ*, which he did not think had as yet been noticed in any Lepidopterous insect.

Mr. Spence communicated some extracts and observations on the honey bees in Brazil, and on an insect which is injurious to the cotton crops in North America; his chief object in so doing being to recommend to the members in like manner to note and bring before the Society any new fact relating to insects met with in the course of their reading and which may lead to interesting and useful discussion, at the same time that the information stumbled on by one member becomes available to all, and that hints for future important inquiries may be thus suggested. Mr. Gardner, F.L.S., Superintendent of the Royal Botanic Garden in Ceylon, in his interesting Travels in Brazil lately published, after stating that on a part of their route from Parnagua to Natividade he was presented at almost every house where he stopped with honey, the produce of one of the smaller bees, mostly of Illiger's genus *Melipone*, so numerous in this part of Brazil, proceeds to give a list of their native names, with a few observations, as follows:—1. *Jataky*. This is a very minute yellowish coloured species, being scarcely two lines long. The honey, which is excellent, very much resembles that of the common hive-bee of Europe. 2. *Mulher branco*. About the same size as the *Jataky*, but of a whitish colour; the honey is likewise good, but a little acid. 3. *Tubí*. A little black bee, smaller than a common house-fly; the honey is good, but has a peculiar and bitter flavour. 4. *Manoel d'Abreu*. About the size of the *Tubí*, but of a yellowish colour; its honey is good. 5. *Atakira*. Black, and nearly of the same size of the *Tubí*, the

principal distinction between them consisting in the kind of entrance to their hives; the *Tubí* makes it of wax, the *Atakira* of clay; its honey is very good. 6. *Oaritî*. Of a blackish colour, and about the same size as the *Tubí;* its honey is rather sour and not good. 7. *Tataíra*. About the size of the *Tubí*, but with a yellow body and a black head; its honey is excellent. 8. *Mumbúco*. Black, and larger than the *Tubí;* the honey after being kept about an hour becomes as sour as lemon juice. 9. *Bejuí*. Very like the *Tubí* but smaller; its honey is excellent. 10. *Tiubá*. Of the size of a large house-fly, and of a greyish black colour; its honey is excellent. 11. *Borá*. About the size of a house-fly, and of a yellowish colour; its honey is acid. 12. *Urussú*. About the size of a large humble-bee; the head is black and the body yellowish; it produces good honey. 13. *Urussú preto*. Entirely black, and upwards of one inch in length; it likewise produces good honey. 14. *Caniára*. Black, and about the same size as the *Urussú preto;* its honey is too bitter to be eatable; it is said to be a great thief of the honey of other bees. 15. *Chupé*. About the size of the *Tiubá*, and of a black colour, it makes its hive of clay on the branches of trees, and is often of a very large size; its honey is good. 16. *Urapuá*. Very like the *Chupé*, but it always builds its hive rounder, flatter, and smaller. 17. *Enchí*. This is a kind of wasp, about the size of a house-fly; its head is black and the body yellow; it builds its hive in the branches of trees; this is of a papery tissue and about three feet in circumference; its honey is good. 18. *Enchá pequeno*. Very similar to the last, but it always makes a smaller hive; it also produces good honey. "The first eleven of these honey-bees construct their cells in the hollow trunks of trees, and the others either in similar situations or beneath the ground; it is only the three last kinds which sting, all the others being harmless. The only attempt I ever saw to domesticate any of these bees was by a Cornish miner in the gold district, who cut off those portions of the trunks of the trees which contained the nests and hung them up under the eaves of his house; they seemed to thrive very well, but whenever the honey was wanted it was necessary to destroy the bees. Both the Indians and the other inhabitants of the country are very expert in tracing these insects to the trees in which they hive; they generally mix the honey, which is very fluid, with farinha [flour?] before they eat it, and of the wax they make a coarse kind of taper about a yard long, which serves in lieu of candles, and which the country people bring to the villages for sale. We found these very convenient, and always carried a

sufficient stock with us; not unfrequently we were obliged to manufacture them ourselves from the wax obtained by my own men: a coarse soft kind of cotton yarn for wicks was always to be purchased at the different fazendas and villages through which we passed."—p. 329. In connexion with this subject one or two suggestions present themselves; one, that probably the larger and wasp-like bees described towards the end, though storing up honey, do not belong to the genus *Melipone*, Illiger; and another, that it would be a valuable contribution to Entomology, if some member of the Society, taking Mr. Gardner's paper as the groundwork, would draw up from other sources a more complete enumeration of the honey-storing bees of Brazil, distinguishing as far as possible their proper genera and species, and giving such facts as are known regarding their habits. As another instance of the kind of communication above referred to, Mr. Spence further mentioned that it had been lately stated in the American papers that the cotton plantations have been attacked by an insect which threatens materially to affect the produce of the crop. Now it is obviously highly desirable that it should be known in this country, which is so intimately connected with the cotton-growing states of the union, what this insect is. Very probably Mr. Doubleday could inform us, and in that case members like himself, ignorant of this fact, would by the merely bringing this newspaper report before the Society acquire an addition to their stock of knowledge; and if it should turn out that no one here knows to what order and genus the insect alluded to belongs, it may be worth consideration whether our Society should not correspond with some American one in order to obtain the desired information.

A notice was read from W. W. Saunders, Esq., (unaccompanied however by sufficient details,) relative to the sudden appearance of great numbers of small caterpillars on pear and other trees during the prevalence of a gloomy black fog at Upper Clapton. Mr. Westwood stated that in Normandy the peasants entertain the vulgar opinion that the cold fog from the north-east (which they term the "vent roux") bears the eggs of young larva of *Yponomeuta cognatella*, which does so much injury to apple trees.

Mr. Weir mentioned, with reference to the effect of weather on the appearance of insects, that there were but very few Lepidopterous larvæ during the present season.

Mr. Douglas and Col. Hearsey made some observations corroborative of the editorial remarks appended to the Biographical notice of James Crowther, relative to the advantage to be derived from making natural history a branch of popular education.

7th June, 1847.

W. Spence, Esq., F.R.S., President, in the Chair.

Donations.

A very highly magnified engraved figure of the proboscis of *Musca vomitoria*. Presented by Mr. Topping.

Specimens of the Cochineal insect from Madeira. By Mr. Westwood.

The Agricultural Gazette for May. By the Editor.

Specimens of *Lophyrus Pini*, with a drawing of the caterpillar, several of which were captured on the Harold Hills near Everton, Notts, at the middle of July, 1846, creeping up the trunks of some fir trees, upon the leaves of which they feed voraciously, having a strong resinous smell. They formed cocoons on the 21st and 22nd of July, and the insects appeared at the end of May, 1847. The caterpillar nearly resembles Hartig's figure of the larva of *L. Pini*, given in his Tab. IV. fig. 1. Presented by Mr. Evans.

Robert Davis, Esq., of Pimlico, was balloted for and elected a Member of the Society.

Exhibitions, Memoirs, &c.

Mr. S. Stevens exhibited a beautiful specimen of *Deilephila celerio*, captured at Leicester; and also of the larva, pupa and imago of *Mamestra nigricans*, found on the banks of the Thames below Gravesend.

Captain Parry exhibited a box of *Coleoptera* from the west coast of tropical Africa, containing both sexes of *Taurhina nireus* and many other rare species.

Mr. Westwood exhibited a number of very interesting *Coleoptera* from Ceylon, being part of the collection of R. Templeton, Esq., including a new species of *Trictenotoma*, &c. &c. He also exhibited from Colonel Hearsey's Collection many new and interesting Indian insects, including a new species of *Saturnia*, *Parnassius Jacquemontii ?* &c. &c.

Mr. Westwood also exhibited some potatoe plants, the underground stem of which was attacked by the prevalent disease, from his own garden at Hammersmith, none of which were infested with *Aphides;* the original set being entire and quite sound as well as the leaves, which would of course be the parts first attacked were the disease produced by the attacks of *Aphides*.

He also exhibited some specimens of a minute species of *Poduridæ*, remarkable for not possessing the power of leaping. Likewise specimens of apple bloom destroyed by the larva of the apple weevil *Balaninus pomorum*, the pupa of which still remained within the dead bloom.

Also specimens illustrative of the natural history of a minute species of *Cecidomyia*, which burrows into the twigs of willows, destroying them for practical purposes. Also specimens of a minute parasitic *Platygaster* by which they are attacked, and a drawing by Mr. Ingpen of the singular scales with which their limbs are entirely covered; by whom also it was stated that the willows are occasionally attacked by a species of *Cecidomyia* which produces large woody galls: and that the original potatoes imported from Peru had been found to be as liable to the prevailing disease as the common sorts.

Mr. Westwood also exhibited living specimens of the larva and pupa of the rare *Ctenophora atrata*, accompanied by the reading of a letter from Mr. Weaver, by whom they had been discovered at Kinlock Rannock, in Perthshire, and by whom also several specimens of *Lamia ædilis* had been captured.

A description of *Cheirotonus Parrii* by J. E. Gray, Esq., was read.

Mr. Spence communicated some observations on *Chelura terebrans*, a small crustaceous animal which attacks the wood of submarine erections, as described in the last number of the Annals of Natural History, and suggested whether it may not be a distinct species; likewise on some particulars stated by Sir J. Rennie.

He also communicated an extract from the London Medical Gazette, No. 108, N. S., p. 904, in which it was stated by Mr. E. Stanley, M.R.C.V.S., that the larva of *Helophilus pendulus* had been found lying upon the spinal sheath of a cart horse, which appeared to have injured its spine, attended with partial paralysis and occasionally with acute pain; subsequent to which the horse had been seized with violent trembling of the limbs, profuse perspiration, and other acute symptoms, which had produced its death, when the spinal sheath was found to be inflamed with extravasation of blood about the lumbar and posterior portion of the dorsal region from twelve to eighteen inches in length, accompanied by one of the above mentioned larvæ.

Colonel Hearsey stated that he had heard of insects having been taken from the spinal marrow of horses in India by Mr. Morecraft, and which had previously produced paralysis in the hind limbs.

5th July, 1847.

W. Spence, Esq., F.R.S., President, in the Chair.

Donations.

The Agricultural Magazine for May. Presented by the Editor.

The London Geological Journal, No. iii. By Edw. Charlesworth, Esq., the Editor thereof.

Specimen Anatomico-physiologicum de Systemate Uropoietico, auctore G. Ph. Groshans. Lugd. Batav. 1847. By the Editor.

John Charles Bowring, Esq., of Hong Kong, and

Lewis B. Bowring, Esq., of Bancoorah, near Burdwar, in Bengal, were elected Corresponding Members of the Society.

Exhibitions, Memoirs, &c.

Mr. White, on behalf of Mr. Foxcroft, exhibited specimens of *Argyrolepia æneana*, recently captured at Wormwood Scrubs in considerable numbers, the habitat of which had been subsequently destroyed by a dealer in order to enhance the value of his specimens.

Mr. F. Bond exhibited specimens of *Psyche fusca* in its different states.

Mr. Westwood exhibited a specimen of *Ægeria apiformis* recently disclosed from the chrysalis, the wings of which were considerably imbricated with fine black scales. It had been reared with others in an abele tree in Oxfordshire. Mr. Douglas stated that this fact had been noticed in the Entomological Magazine by Mr. Henry Doubleday.

Mr. Westwood also exhibited specimens of *Helophorus fennicus*, which had been observed eating off the leaves of young turnips during the night, but only in certain parts of a field where different kinds of manures (spread in rows) crossed each other. (See Gardeners' Chronicle, 1847, p. 442.) So strictly had they preserved this peculiarity that they ate across more than 100 rows, and stopped at the very row where the manures were changed. Messrs. Spence and Stephens stated that these insects generally feed on water plants: Mr. Waterhouse had generally found them on land, rarely in water; Mr. Edward Doubleday had found *H. tuberculatus* feeding on decayed turnips; Dr. Schaum had

found it eating decayed fish, and Mr. Ingpen had taken it both on the sea shore and inland.

Mr. Westwood exhibited specimens and drawings of a minute but very remarkable Hymenopterous parasite belonging to the family *Chalcididæ*, reared by the late M. Victor Audouin in the nests of mason bees, near Paris, in which the antennæ of the males are singularly distorted, and the wings almost rudimental; thus offering a strikingly opposite analogy to other bee parasites, such as *Stylops*, *Meloe*, and *Sitaris*. Mr. Westwood proposed for this insect the name of *Melittobia Audouinii*.

A paper by Mr. F. Smith on the habits of *Trypoxylon* and various other fossorial *Hymenoptera* was read. He also exhibited various rare British *Coleoptera* recently captured.

Professor van der Hoeven (who was present as a visitor) exhibited the larva of an *Œstrus*, which had been extracted from the body of a female patient. Professor Essmark stated that an analogous case had been communicated to the meeting of Naturalists in Christiania in 1845; and Mr. Edward Doubleday gave some particulars of two cases which had happened to himself whilst in North America. He had heard of several similar cases, amongst which was a child which had had three taken from its neck. Mr. Newport remarked on the case which he had described in the Transactions with reference to the question as to there being a distinct *Œstrus hominis*.

Mr. Westwood exhibited specimens of *Phytocoris pabulinus*, a Cimicideous insect, which had been sent to him by various correspondents as the real cause of the potatoe disease. He had himself also observed it, as well as another closely allied species, on potatoes at Hammersmith, but in such small numbers as to be incapable of doing any material mischief to the plant. He also read an extract from the Bristol Journal, in which an article had appeared by Mr. Biggs, who described the disease as produced by the attacks of insects, which, from the description, appeared to be identical with *Phytocoris pabulinus*.* The operations of *Aphides* on the hop had been cited by this and other writers as a proof of the destructive powers of these insects; but even in the worst cases the vitality of the hop plant was never destroyed as in the potatoe. He also stated, on the authority of Mr. J. E. Gray, that three distinct species of *Aphis* had been obtained from Mr. Topping, the referee of Mr. A. Smee, as the real *Aphis vastator* of the latter. Mr. E. Doubleday confirmed this statement, and

* P.S. The insect proves to be a species of *Podura*.

observed that *Aphides* could with difficulty be found upon the potatoes in Essex. Four different species of insects had been brought to him as the cause of the disease; namely, the turnip-flea beetle, the larva of *Coccinella*, a species of *Meligethes*, and another insect which was too much injured for identification. He had also observed that two plum-trees, which had last year been defoliated by *Aphides*, had this year produced an abundant crop. He also stated that in the "Illustrated London News" of the preceding week an apple leaf, evidently partly eaten by the larvæ of *Yponomeuta padella*, had been figured as an illustration of the attacks of *Aphides*.

Professor Milne Edwards, who was present, stated that the assertion of Mr. Smee wanted novelty. It had been at first entertained in France, but the error of such a notion was now acknowledged.

Mr. Hobbs exhibited some potatoe plants on which he had experimented, and stated that by enclosing one within a gauze cover, together with a number of the *Phytocoris*, they had destroyed it, whilst another plant, treated in the same manner, but powdered with lime, had escaped their attacks and had grown considerably. Mr. Waterhouse stated that this insect was very common upon different plants, and that they could not therefore be considered as the cause of a disease confined to the potatoe. Mr. Doubleday also remarked, that before the assertion that this *Phytocoris* is the cause of the disease could be admitted, it must be shown that the insect has occurred in great profusion throughout all the parts of the world where the disease has appeared. Mr. Spence stated that the supporters of the insectal theory of the disease had failed to show that these insects ever produced gangrene on the plants, and Mr. J. F. Stephens mentioned that Mr. Smee's knowledge of the *Aphis vastator* was not earlier than last year, when he brought two specimens to Mr. Stephens in order to obtain their names.

Mr. Spence read a note from Mr. Gulliver, communicating some observations made by Dr. Davy on the attacks of a species of *Coccus* upon the sugar canes in the West Indies. Specimens of the insect, together with one of *Delphax saccharivora*, Westw., were exhibited. Professor Milne Edwards observed, that hot water had been found to be a valuable remedy against the insects which attack the vine, by destroying the eggs and larvæ; he was doubtful, however, whether it might not be injurious if applied to the sugar cane.

2nd August, 1847.

W. Spence, Esq., F.R.S., President, in the Chair.

Donations.

The Agricultural Magazine for June. Presented by the Editor.

Monograph of the Species of Pasimachus inhabiting the United States, by Major Le Conte, in two parts. Presented by the Author.

Journal of the Royal Agricultural Society of England. Vol viii. part i. By that Society.

Exhibitions, Memoirs, &c.

Mr. F. Bond exhibited specimens of *Leucania Helmanni*, Bdv., and of *Nonagria neurica*, Hübn., both new to this country, from Yaxley Fen, taken by means of sugar daubed on trees: also specimens of *Graphiphora subrosea*, bred from the caterpillar.

Messrs. J. F. Stephens and Ingall exhibited specimens of *Lachnus quercûs*, a singular Aphideous insect, new to this country, found in crevices of bark of oak-trees near Dulwich, thrusting its long proboscis nearly up to the base into the wood of the tree, so that it cannot be withdrawn without great difficulty and fear of injuring the insects, in which case the ants immediately rush to suck up the fluids discharged by the *Lachnus*.

Mr. Douglas exhibited a new species of *Cochylis*, also *Spilonota fœnella*, *Pseudotomia artemisiæ*, *Pterophorus calodactylus*, &c., from Charlton sand pit.

Mr. Westwood exhibited a new species of *Charaxes* from India, unique in the collection of Captain Boys, allied to *Ch. Eudamippus*.

Mr. Wing exhibited a specimen of the larva of *Gortyna flavago*, found burrowing into the stems of potatoes.

Mr. Spence communicated a paragraph from a local newspaper describing the destruction of the foliage of the oaks near Huddersfield by the larva of *Tortrix viridana*, therein described as the *Aphis quercûs;* affording another instance of the want of a knowledge of the commonest facts in Zoology among persons whose position in society required their cognizance of such matters, and the consequent necessity of making Zoology a branch of popular education.

Mr. Edward Doubleday complained of a personal misrepresentation which had been made of some of his observations at the last meeting of the Society, concerning the potatoe disease, in the "Illustrated London News."

Mr. Wing exhibited specimens of a species of *Yponomeuta*, which feeds on apple trees, long confounded with *Y. padella*, but which, being distinct, especially in the caterpillar state, it was proposed to name *Y. malivorella*.

Messrs. Westwood and Ingpen exhibited specimens of *Aphis Fabæ*, which had swarmed to an astonishing extent in various parts of the west of England from the 14th to the 21st July; Mr. Westwood reading extracts from various communications which he had received on the subject, by which it appeared that their flights were accompanied in some places by a heavy and highly electrical state of the atmosphere; and that although they had attacked a great variety of plants, none of them had been found upon the potatoe. Mr. Westwood also read some notes on the state of the atmosphere from the 4th to the 17th July, whence he was led to consider that it was owing to the sudden increase of heat, to not less than eighteen degrees above the usual average at that time, that the *Aphides* had prematurely acquired wings, whilst the electrical state of the atmosphere had caused them to swarm to the great extent which had been observed.

Messrs. Doubleday and Schaum made some remarks, doubting whether the increased heat of the period had led to the development of wings; and suggesting that the case in question was rather an early production of the winged state of the species, which did not ordinarily occur till the autumn; the former gentleman observed that he had noticed winged *Aphides* as early as May.

Mr. Ingpen stated, that each female specimen of *Aphis vastator* produces ten young ones; and Col. Hearsey suggested how easily these small families might be destroyed by hand in the early part of the summer, thereby preventing the damage caused by the successive generations.

Mr. Spence read an extract from the Gardeners' Chronicle, July 25, 1847, containing a notice by Mr. Williams, of Pitmaston, on the recent swarms of the black *Aphis* of the bean, as well as extracts from White's Natural History of Selborne, and other works; whence he was led to remark on the want of our knowledge as to many of the facts concerning different species of *Aphides*, the general statements which had been made respecting them being inapplicable to each species. He thought it advisable that a report should be drawn up detailing the positive facts known respecting these insects.

Some Notes on the capture of *Paussidæ*, at the Cape of Good Hope, by H. Benson, Esq.; and

Descriptions of some new species of *Charaxes*, by J. O. Westwood, were read; and a vote of thanks to the Rev. F. W. Hope was passed, for his donation of the plates illustrating the latter memoir.

6th September, 1847.

W. Spence, Esq., President, F.R.S., in the Chair.

Donations.

Bulletin de la Société Impériale des Naturalistes de Moscou, for 1846, parts 3 & 4; and 1847, part 1; also

Jubilæum Semisecularem Doctoris Medicinæ et Philosophiæ Gotthelf Fischer de Waldheim, &c.

Séance Extraordinaire de la Soc. Imp. d. Natural. de Moscou, 22d February, 1847. All presented by the Imperial Society of Naturalists of Moscow.

Memoir on the Hessian Fly, from the Transactions of the New York State Agricultural Society. Vol. 6. By Dr. Asa Fitch.

Memoir on the Winter Insects of New York. By the same. Presented by the Author.

Journal of the Natural History Society of Boston. Vol. 5, No. 3; and

Proceedings of the same Society. Nos. 10—14. Presented by that Society.

Abhandlungen der Mathemat. Physikal. Classe der Königl. Bayerischen Akademie der Wissenschaften. Viert. Band. 3 Abth.

Bulletin of the same Society for 1846, 1—77;

Almanach of the same Society for 1847;

Die Ueberbleibsel der Altægypschen Menschenrace. All presented by the Royal Academy of Bavaria.

Specimen of the leather-like material formed by insects over Indian maize, when laid up in store in Mexico. Presented by W. F. Evans, Esq. The insect was stated by Percy Doyle, Esq. by whom the production in question was brought to this country, to be about the size of an ant, and black. The coating is at first very thin, but it is spun over by degrees till it becomes of the thickness of stout leather. Some of the insects ate their way out of a mahogany box in which they were placed.

Col. J. B. Hearsey, and Dr. H. Schaum, Secretary of the Entomological Society of Stettin, were ballotted for, and elected ordinary members of the Society.

Exhibitions, Memoirs, &c.

Mr. Edward Doubleday exhibited some singular galls from China, of which a cargo had been recently imported as an article of commerce, each of which was about the size of a small egg, and hollow, and contained a great number of very minute wingless Homopterous insects.

Mr. Evans exhibited a variety of insects from Hong Kong.

Mr. S. Stevens exhibited a number of specimens of *Catocala sponsa* and *promissa*, taken by sugar this summer in the New Forest; also *Pamphila Actæon*, from the burning cliff, Weymouth; *Margaritia asinalis; Spilonota amœnana* (a new species); *Carpocapsa pupillana*, &c. from the Isle of Portland and the Chisel bank; *Masoreus luxatus*, and other *Coleoptera;* also *Acidalia pallidaria*, *Catoptria citrina*, and a species of *Pancalia*, (three *Lepidoptera* new to this country,) taken at Southend; also the following rare *Coleoptera* from the latter locality, *Dolichosoma linearis*, *Ectinus aterrimus*, *Aphanistichus pusillus*, *Thyamis 4-pustulata*, &c.; also a Gynandromorphous specimen of *Colias Edusa*, and a specimen of *Xylophasia Polyodon*, found impaled on a thorn.

Mr. A. White called the attention of the meeting to the remarkable locust *Petasida Ephippigera*, described by him in Eyre's Journal of Discovery in Central Australia (vol. i. p. 432, t. 4, f. 1), which was also figured in Dr. Leichardt's recently published Journal in Australia. He also corrected the synonymy of *Saperda villosa* from New Zealand, which had been figured in the Fauna of New Zealand, published in the Zoology of the Voyage of H.M. ships Erebus and Terror, under the name of *Hemona humilis*. He also exhibited some other insects from New Zealand, collected by Mr. Colenso, two or three of which were not contained in the work above mentioned. He also stated that the *Hymenoptera*, *Diptera* and *Hemiptera* were very European in their appearance. He also made some observations on the habits and history of spiders, especially *Actinopus ædificatorius* and *Cteniza nidulans*, one of the nests of which, brought from Jamaica by Mr. Gosse, exhibited the additional trap-door.

Mr. Ingall exhibited a twig of poplar covered by the swollen skins of Ichneumonized *Aphides*, together with specimens of the parasites.

Mr. Spence exhibited a new species of *Nemoptera* from New Holland, for which he proposed the name *N. Huttii*, in compliment to Governor Hutt, from whom it had been received; likewise specimens of the larvæ of *Agrotus segetum*, which had proved very destructive this year to the turnip crops.

Mr. Ingpen exhibited a locust taken in Hyde Park, and a specimen of *Papilio machaon*, reared from a dark-striped *Chrysalis;* Mr. Marshall observed that the sexes of this butterfly differed in the colour of the chrysalis.

A note was also read from John Hogg, Esq. F.L.S., relative to the capture of several living locusts at Scarborough, on the 21st August, and the discovery of several others lying dead on the coast, being probably part of a swarm of those insects driven upon our coast from the Continent by the south-east wind which then prevailed; and Mr. Spence mentioned the occurrence of a great swarm of locusts in Moldavia on the 25th August, brought by the east wind from Bessarabia.

M. W. Thomson, jun., exhibited specimens of *Porrectaria laricella*, a species new to Britain, captured in July in the neighbourhood of Herne Hill, on fences; also specimens of *Actinopus ædificatorius*, recently received alive from Barbary, upon which he had instituted various experiments with reference to the construction of the valves, and the long duration of the insects deprived of food.

A Letter on the Habits of *Aphides*, by F. Walker, Esq. addressed to Mr. Spence, was read; also

A Translation from Ratzeburg's Forstinsecten, vol. iii., on the Economy of the *Aphidæ*, communicated by Dr. Schaum; and

A Note by Mr. Alfred Smee, on a new locality for *Lachnus quercûs*, namely, on the first oak-tree in the lane leading from the Chingford and Waltham road to High Beech, on the right hand side of the way leading to High Beech.

Col. Hearsey noticed that some Indian species of plants reared by him in frames in England, from Indian seeds, were as much infested with *Aphides* as indigenous plants.

A Monograph on the British species of the Neuropterous genus *Chrysopa*, by Mr. W. F. Evans, was also read, accompanied by two plates, presented by the author.

Some notes were read by Mr. Westwood on the atmospherical peculiarities observed during the occurrence of the swarms of *Coccinellidæ* on the 12th and 13th August last, and on a swarm of *Harpalidæ*, observed on the evening of the 12th, near Dover, whence it appeared that the barometer had undergone a gradual rise from the 6th till the 14th of that month; and that on the 11th and 12th the thermometer suddenly rose nearly 15 degrees, the 12th being very sultry.

Mr. Westwood also exhibited the larva of *Drilus flavescens;* the flower of a pelargonium cut by a *Megachile;* also three

Hymenopterous parasites, belonging to the genera *Pteromalus* and *Megaspilus*, found hovering over wheat infested by the larvæ of the Wheat Midge; also a singular species of *Saturnia* from Central America, remarkable for the very large size of the talc-like spots of its wings, from the Collection of the Rev. F. W. Hope.

A Note upon Flights of *Aphides*, addressed to W. Spence, Esq. by G. H. K. Thwaites, Esq. dated Bristol, August 14, 1847, was read as follows:

"The *Aphides* did not visit our garden, but were rather numerous in some gardens very near to us, where they appeared to do little harm, and soon died, as I am informed. From the migrations being synchronous, or nearly so, in every part of the country, there seems reason to believe that it is an instinctive movement on the part of the insect, quite independent of atmospheric conditions, or failure of the supply of food, and that it probably takes place every year, but the swams are not sufficiently large to attract observation. The Rev. W. Clifford, the clergyman of our parish, told me several months ago that he was standing with Mrs. Clifford at the garden door, and noticed a peculiar kind of cloud approaching, which struck him as so remarkable, that he said to her, 'I think we had better go in and shut the doors and windows, for I think that cloud is a blight in the air.' He did so, and after the cloud had passed over, he found the plants in the garden covered with amazing numbers of 'blight' (*Aphides*), which, I think, he told me were green."*

Mr. Douglas exhibited a specimen of *Graphiphora depuncta*, captured by Mr. Hodgkinson of Carlisle, and stated that *Polia lichenia*, a species new to this country, had been captured in the New Forest by Mrs. Vines.

* In a subsequent communication, dated September 20, 1847, Mr. Thwaites inclosed a note from the Rev. Mr. Wayne, rector of Much Wenlock, Shropshire, to whom he had written on the subject, from which the following is an extract. "The black *Aphis* arrived in this neighbourhood about six weeks since as I guess, that is, about the middle of July, settling chiefly on the asparagus, French bean, turnip, onion, and (if it were the same) on the common broad bean, to its total destruction—at least of the flower and pod. The common groundsel also was covered. They came suddenly and died suddenly, remaining attached to the plants as if alive. You ask, 'Were they seen approaching and whence?' On this point one of my neighbours told me, that standing by his house one or two evenings just towards sun-set, he saw the *Aphides* coming like a swarm of locusts from the west, and '*knitting*'† on all the plants of the garden. He described the western sky as *full of them*."

[† Query, nitting, *i. e.* ovipositing.]

4th October, 1847.

W. Yarrell, Esq. F.Z.S. &c., Vice-President, in the Chair.

Donations.

Dei Vantaggi che l'Agricoltura puo recevare dallo Studio dell' Entomologia. Presented by Signor C. Passerini, Hon. M.E.S., the author thereof.

Proceedings of the Zoological Society of London, Nos. 167—177; Report and Lists of the Members of the same Society for 1847. Presented by that Society.

Report of the Dublin University Museum. Presented by the Committee.

A portrait of the Dipterologist, J. W. Meigen. Presented by M. Foerster, of Aix-la-Chapelle.

A specimen of *Sirex gigas* ♀, taken at Dorking. Presented by Mr. Moore, jun.

Exhibitions, Memoirs, &c.

Mr. Samuel Stevens exhibited a living specimen of *Locusta migratoria*, captured at Hammersmith.

Mr. Courtney exhibited a box of British *Lepidoptera*, including several rare species.

Mr. Bedell exhibited a box containing a very extensive series of *Microlepidoptera*, including two new species, *Micrositia triangulella*, found on trunks of oaks at West Wyckham Wood, in June, 1847, and *Micrositia mandella*.

Mr. Westwood exhibited specimens of drawings of some new exotic *Cetoniidæ*, from the collections of Colonel Hearsey, Captain Boys, and Mr. Benson; also some *Lepidoptera*, from Cape Palmas, including a new species of *Saturnia*, and a new allied genus.

Mr. F. Bond exhibited two specimens of *Locusta migratoria*, taken at Duxford, and near York, in August and September; also a specimen of *Buprestis* (*Ancylocheira*) *mauritanica*, Lucas, Voy. d'Algerie, taken alive on an oak post, in Plaistow Marshes, on the 9th September last.

Mr. A. White read some extracts from notes on the habits of exotic spiders, observed by Mr. Arthur Adams, intended for publication in the Appendix of Belcher's Voyage.

Mr. Westwood read the description of *Nemoptera Huttii*, from Western Australia.

"It is very difficult to conceive what can be the object of the singularly modified hind-wings in the genus *Nemoptera*, in some of which they are extraordinarily elongated, and scarcely wider than

a thread, whilst in others they are also elongated, but furnished on each side with curious dilated membranes. In the great French work on Egypt, Savigny has represented a species sitting at rest, in which the hind wings are held upright over the back, like the wings of a butterfly.

" In Dr. Klug's monograph, the localities of the different species are the South of Europe, the North, West, South and Eastern parts of Africa, and the West of Asia. Colonel Hearsey has, however, brought a species home from Central India, figured in the ' Cabinet of Oriental Entomology,' and we have now to record a species from Western Australia.

" *Nemoptera Huttii.* Spence's MSS. (Plate VIII. fig. 1.)

" N. supra nigra, subtus cum lateribus flava, nigro-varia; pedibus flavis; alis anticis hyalinis, stigmate minimo fusco; posticis elongatis, fuscis, pone medium biextensis, incisionibus obliquis, apice hyalino; antennis crassis, elongatis.

" Expansio alarum anticarum $1\frac{1}{2}$ unc. Affinis *N. extensæ*, Oliv.; *barbaræ*, Fab.; et præsertim *dilatatæ*, Klug.

" Taken near a swamp on the road between Perth and Guildford, in Western Australia, and communicated by Governor Hutt to Wm. Spence, Esq. A second specimen has more recently been obtained by the British Museum.

" *Obs.*—The parts of the mouth are more exposed, and the antennæ much more incrassated than in *N. Coa* and its allies."

1*st November*, 1847.

A. Ingpen, Esq. A.L.S., Vice-President, in the Chair.

Donations.

Nouveaux Mémoires de l'Académie Royale de Bruxelles. Vols. 19 and 20;

Annuaires de l'Académie for 1846 and 1847;

Bulletin de l'Académie des Sciences de Belgique. Vol. 13, Nos. 1—12; Vol. 14, Nos. 1—6;

Mémoires des Savans Etrangères. Vols. 20, 21, (3 parts). All presented by the Royal Academy of Brussels.

Mantissa Secunda Curculionidum. Presented by M. C. J. Schönherr, the Author thereof.

Exhibitions, Memoirs, &c.

Mr. Ingall exhibited specimens of the female of *Lachnus quercûs*, remarkable for being destitute of the long rostrum of the male, and also the eggs of the same insect.

Mr. Weir exhibited specimens of a minute species of ant (*Myrmica domestica*), which infested the house of Mr. Norton, in Half Moon Street, Piccadilly, where they swarmed in thousands.

Colonel Hearsey exhibited a specimen of the mud-nest of a species of *Odynerus* from India, which had been built in the angle of a room, and provisioned with spiders.

Mr. Weaver exhibited some rare British insects captured by himself in Perthshire during the preceding summer, including specimens of *Libellula arctica*, and of *Pytho depressus;* the latter being an insect stated by Mr. Waterhouse to be common in Sweden, but new to this country, four specimens of which had been taken under the bark of pine trees by Mr. Weaver, from whom a letter was read relative to the capture of these and other insects, which he had collected for sale.

A letter was read from Mr. Spence, describing the havoc committed by *Anobium tessellatum*, on a beam of oak supporting the stone-work of the vestry window of Barham Church, Suffolk, which was completely honey-combed with holes of the size of a small quill formed by the larvæ, and precisely resembled the end of the beams of houses at Brussels destroyed by the same insect, which he observed in 1836, (vide Trans. Ent. Soc. vol. ii., Proc. p. x.), and in some of which were dead specimens of the perfect insect, which, from some cause, had not been able to make their way out of the wood upon assuming the perfect state.

Mr. Ingpen exhibited the larva of a Lepidopterous insect, probably that of an *Agrotis*, which was at that time committing great ravages amongst the carrots about Stratford, Essex.

A letter was read from Captain Hutton, descriptive of the mode in which *Actias Selene* cuts its way through the cocoon, and on the habits of its caterpillar; also on the habits of *Cheirotonus Macleaii;* and on a singularity in the wings of the genus *Euploea*, forming a sort of pocket.

Mr. Doubleday observed, that the pouch described by Captain Hutton, could not be considered as a character of the genus *Euploea*.

A letter was also read from Mr. Rutter, of Black Rock, Brighton, respecting the nests of *Megachile*, of which he forwarded specimens.

A memoir, containing descriptions of numerous new species of *Cetoniidæ*, with figures of three species, and dissections, by Dr. Schaum, was read.

—— Longley, Esq., was ballotted for, and elected a Member of the Society.

6th December, 1847.

W. Spence, Esq., F.R.S., President, in the Chair.

Donations.

The System of Nature. Presented by E. Newman, Esq., F.L.S., the Author thereof.

Mr. W. Wing, of 44, Dorset Street, Portman Square, was elected a Member of the Society.

Exhibitions, Memoirs, &c.

Mr. J. W. G. Gutch exhibited collections of *Coleoptera* from Poland and Servia.

The Rev. W. Kirby, Honorary President, sent for exhibition specimens of the eggs of *Penthaleus lapidarius*, a mite found in the crevices of stones on commons, and also a drawing of the *Penthaleus*.

The President communicated a letter from the Rev. J. B. Meadows, of Witnesham, near Ipswich, on the destruction of Green Mazagan Beans by *Bruchus granarius;* also on the effect of burnt earth, as a manure, in preventing the attacks of *Agrotis Segetum* on the Turnip crops.

Mr. Westwood said, that he had that evening observed the luminosity of one of the *Scolopendridæ;* on which Mr. Newport stated, that it was in the latter months of the year, at the period of copulation, that this peculiarity is visible. Mr. Westwood also distributed specimens of *Rhizobius Helianthemi*, an apterous species of the family *Aphidæ*, infesting the tubers of the Jerusalem artichoke.

Mr. Edleston sent for exhibition some curiously coloured varieties of *Segetia Xanthographa*, *Orthosia instabilis*, and *Cosmia trapetzina*.

Mr. Thompson exhibited a very long thread-like animal, possibly an *Entozoon*.

Mr. Westwood read a paper on some new Australian species of *Mydasidæ*.

The President read an extract from the Times newspaper on the destruction of the cotton crops in the United States by some unknown species of insect; whereupon a discussion ensued, in which the importance of the subject was alluded to, especially in regard to its influence on the prosperity of our cotton manufactures, and the possibility of the insect being introduced into our

East Indian territories with the seed of American cotton. It was resolved to request Dr. Schaum, now in the United States, to investigate the subject, with a view to the identification of the insect, and the discovery of a remedy for its ravages.

3rd January, 1848.

W. Spence, Esq., F.R.S., President, in the Chair.

Donations.

Journal of the Royal Agricultural Society, Vol. 8, part 2. Presented by that Society.

Transactions of the Linnean Society, Vol. 20, part 2;

Proceedings of the Linnean Society, Parts 30—33;

List of Members of the Linnean Society for 1847. All presented by that Society.

Handbuch der Entomologie, Vol. 5;

Genera Insectorum, Part 10;

Memoir upon *Athlophorus Klugii*. All presented by Dr. Hermann Burmeister, the Author thereof.

Conspectus Crustaceorum, Part 1. Presented by —— Dana, Esq., the Author thereof.

Annals of the Lyceum of Natural History of New York, Vol. 4, parts 8 and 9. Presented by Major Lecomte.

Exhibitions, Memoirs, &c.

Mr. Westwood exhibited various larvæ inhabiting the Truffle, including those of several *Diptera*, and also that of *Leiodes cinnamomea*, of which he exhibited a drawing, with numerous anatomical details.

Mr. F. Bond communicated a note from Mr. C. Thurnall, on a flight of *Ephemera* (*Palingenia*) *virgo*, seen near Heidelberg, which, from their numbers, had the appearance of a snow storm.

Mr. A. Ingpen exhibited a very minute Coccideous insect covered with broad scales, probably the larva of a species of *Calypticus;* and also a highly magnified drawing thereof.

Capt. Parry read descriptions of several new species of *Coleoptera*.

Mr. Westwood read descriptions of a number of new Exotic *Diptera*, belonging to the family *Acroceridæ*.

7th February, 1848.

W. Spence, Esq., F.R.S., President, in the Chair.

Donations.

Annales de la Société Entomologique de France, 2nd Series, Vol. 4 and Vol. 5, parts 1—3. Presented by that Society.

Linnæa Entomologica, Vol. 2;

Entomologische Zeitung, for 1847. Both presented by the Entomological Society of Stettin.

Entomographie de la Russie, Vol. 4. Presented by Dr. Fischer de Waldheim, the Author thereof.

The Athenæum for November and December, 1847. Presented by the Editor.

On the Study of Natural History as a Branch of Education. Presented by R. Paterson, Esq., the Author thereof.

Annales des Sciences Physiques et Naturelles, publiées par la Société Royale d'Agriculture et d'Histoire Naturelle de Lyon, Vol. 9. Presented by that Society.

Exhibitions, Memoirs, &c.

Mr. W. W. Saunders exhibited a series of *Colcoptera* from Mexico, amongst which were some very beautiful and interesting new species and generic forms. Mr. Westwood remarked, that it would be very important to obtain correct information as to the localities in which they had been collected, as so large a portion of them differed both from those of the collection made in Mexico by Mr. Coffin and those described by M. Chevrolat. Mr. Saunders believed that they were chiefly from the higher regions, but the person by whom the collection was made being dead he feared it was not possible now to obtain the desired information. Mr. E. Doubleday remarked, that the *Lepidoptera* in the collection closely resembled those brought from the neighbourhood of Oajaca by Mr. Hartweg, now in the British Museum.

Mr. S. Stevens exhibited a specimen of *Nephopteryx angustella*, Zeller, a moth new to Britain, which had been taken near Darenth Wood in September last.

Mr. A. H. Haliday read a paper in support of Dr. Erichson's conjecture, that the animal discovered by Mr. Hogg on the fresh water sponge, and described by Mr. Westwood, provisionally, under the name of *Branchiotoma Spongillæ*, may be the larva of *Hemerobius fuscatus*, Fabr., for which Dr. Burmeister has instituted the genus *Sisyra*. After a summary of the details furnished

by Mr. Westwood and Dr. Grube, and a notice of some points in regard to which his observations, differing from these, showed a yet closer agreement with the larva of the *Hemerobii*, the analogy between the animal of the sponge and the winged *Sisyra*, particularly as regards the alimentary canal and its appendages, was contrasted with the modifications which these undergo in *Hemerobius* during the course of its transformations. The analogies in detail between the two sorts of larva chiefly relied on, were in the number and position of the eyes, the structure and connection of the two pairs of jaws, the double outlets of the æsophagus, and the number and arrangement of the malpighian vessels. The signal differences between this animal and the larva of *Hemerobius*, and the analogy it bears to *Sialis*, in the presence of jointed branchiæ, were considered in relation to its aquatic life and its mode of nutrition. The frequency of the perfect insect about the places where the animal of the *Spongilla* has been found, was also adverted to in corroboration of their probable relation.

Some remarks were added upon another Neuropterous insect, the *Coniopteryx tineiformis* of Curtis, maintaining the theory of Messrs. Westwood and Wesmael, of its affinity to the *Hemerobii*, against Dr. Burmeister, who has classed it with *Psocus* and *Termes* amongst his *Corrodentia*, insects which pass through an incomplete metamorphosis; in which classification he has been followed by Dr. Rambur.

This insect, which undergoes a metamorphosis very similar to that of the *Hemerobii*, was shown also to agree with these in important characters of internal structure, although with such differences as may perhaps justify its being retained as the type of a distinct family, the place of which cannot be far from the *Hemerobii*.

The paper was illustrated by numerous anatomical drawings, and gave rise to a lengthened discussion.

6th March, 1848.

W. Spence, Esq., F.R.S., President, in the Chair.

Donations.

Proceedings of the Royal Society, parts 59—69. Presented by that Society.

Five hundred copies of the President's Address at the Anniversary Meeting of the Society. Presented by the President for distribution amongst the Members of the Society and their friends.

Exhibitions, Memoirs, &c.

Mr. White exhibited a box of insects from Hong Kong, where they had been collected by J. C. Bowring, Esq., corresponding member of the Society. Mr. White pointed out some new species amongst the *Cicindelidæ*, *Carabidæ*, *Chalcididæ*, and other groups. Mr. Doubleday called attention to a new species of *Leptocircus*, and some other *Lepidoptera* either new or rare.

A letter from Mr. Bowring was subsequently read, containing much information on the habits of some of the insects contained in the box.

Mr. Westwood exhibited a box containing above forty specimens of the Dipterous family *Nemestrinidæ*, belonging to nearly thirty species, the greater portion of them are new and from New South Wales. They were from his own collection and those of Messrs. Saunders and Hope.

Mr. Evans exhibited the pupa case of a small male specimen of *Diaphonia frontalis*, an Australian species of the *Cetoniadæ*. This specimen, which was found in the rotten stump of a gum tree, was from the collection of the Rev. F. W. Hope.

Mr. Saunders exhibited some interesting insects from Port Philip, Australia.

A letter was read from Mr. H. E. Newman, stating that he had captured a pair of the common wasp actually in coitu, and had preserved the specimens in that condition, and would forward them to the Society.

A letter was read from M. F. Sachse, 30, Trinity Square, Borough, in which that gentlemen offered to become the medium of communication between the Entomological Society of London and Stettin, and between the members thereof individually.

Mr. J. W. Douglas read a "Note on a remarkable variety of *Segetia Xanthographa*."

The President read an extract from a letter addressed to G. H. K. Thwaites, Esq., by a gentleman resident in South Australia, relative to an insect which had destroyed the potatoes there. The writer says, "the fly which destroyed the potatoe crop was a small white tree bug, with transparent wings, not half the size of the common house-fly. They ate up all the tops of the potatoes, so that there was not a leaf to be seen, and of course the roots were useless where they attacked them in the early state."

The President read an extract from a letter addressed by J. A. Turner, Esq., of Manchester, to Dr. Royle, relative to the insect

which had destroyed the cotton crop in India. Mr. E. Doubleday remarked upon this communication that the moth, the larva of which had so seriously injured the cotton crop in the United States in 1846, was probably the *Noctua Xylinâ* of Say. It was allied to the genus *Ophiusa*, but would not come under any European type. In Louisiana and Mississippi it had destroyed one third of the crop, yet he had never himself met with it in his journey in the United States, nor seen it in any collection, neither did any drawing of it exist in the vast collection of drawings of Georgian insects made by Abbot, now in the library of the British Museum. He was indebted to his learned friend Dr. Harris for specimens of it and its larva, as also for many details on its habits which he had not felt justified in publishing, as Dr. Harris was preparing a treatise on the subject.

The President read an extract from the Halifax Times relative to the insects which destroy the turnip crops in Nova Scotia. This was particularly interesting, from indicating very clearly an insect of an order of which no species was hitherto known to be injurious to this crop. The writer says, " the principal enemy to turnips and cabbage of every kind, while in the seed leaf, is the hopper or ground flea. It is a species of *Podura*, has no wings of any kind, is nearly globular, of the size of a pin's head or less; and by the help of its forked tail it hops with great agility. They are not plentiful on new land, but on all old cultivated ground they are to be found on every square inch. They will not sit on damp ground, for this reason the small stones, chips, or anything that will quickly dry, should be raked from the top of the ridge before the seed is sowed, and after sowing it should be rolled or trampled hard, and a small quantity of salt sprinkled on it. The best salt for this purpose is that which always keeps damp, owing to a small quantity of muriate of lime which is mixed with it. A thin layer of sea weed spread over the drills is a perfect security against the hoppers, and a little straw or worthless hay from the top of a stack will prevent them from doing much damage. In some places in a cold spring turnips are attacked by a beetle as large as a flea, with a spotted or striped shell, which can fly, but as it usually travels by hopping, it does much less harm to the covered plants than to those which are entirely exposed."

The writer then alludes as follows to a Lepidopterous larva allied to those called cut-worms* in Canada, Nova Scotia, and the

* The name cut-worm is applied to the larvæ of various species of *Agrotis*, for a detailed account of which see Harris's Report, p. 321, et seq.—*E. D.*

United States. "The grey grub is a formidable enemy to all kinds of turnips, but prefers the common turnip to the Swedish. Except that they are smaller, they resemble the common grubs that cut off our cabbage, Indian corn, &c., and like them are produced from the eggs of a grey moth or miller, that flies by night. They are not eaten either by domestic fowls or robins, both of whom devour the common cut-worm or cabbage grub, but the parent moths are fed to their young by the robins. A considerable proportion of these grubs can be destroyed by lime if applied at the proper time. The turnips should be frequently examined from the time the leaves are three inches long. The grubs will be found at first under a web, like that of a spider, which generally covers about a dozen, which are not then thicker than so many pins. If the lime is applied immediately it will destroy most of them, but if they are neglected for three or four days they will leave the web and conceal themselves under dead leaves, chips, or small stones by day, and devour the leaves by night, without being checked in any degree by lime, tobacco water, or any other application that we have tried. The lime should be slacked three or four weeks before it is expected to be wanted, and kept dry; and should be applied early in the morning while the leaves are covered with dew. Take about three pints of lime in an oznaburg bag that will hold a gallon, and pass through the field shaking it over the leaves; the lime will fly through the bag like smoke, and make the lower side of the leaves nearly as white as the top. After this the turnips should still be watched, for the eggs are in some seasons deposited upon the leaves a second and a third time."

Mr. Doubleday exhibited some larvæ of one of the *Tineidæ*, which had destroyed the corks of a stock of wine so as to render it necessary to recork all the bottles.

Mr. Saunders remarked on some previous communications on the same subject.

Mr. J. W. Douglas called the attention of the meeting to a remark in a recent part of the Annales de la Société Entomologique de la France, in which M. Guénée spoke of the name *occultana* given by Mr. Douglas to a species of *Pædisca*, as a manuscript name, whereas it was described by him in the "Zoologist" for 1846. He also stated that Mrs. Vines, a lady residing in the New Forest, having last year reared a great many specimens of *Catocala sponsa* and *C. promissa*, had observed that they all emerged from the pupa between the hours of ten and twelve P.M.

3rd April, 1848.

W. Spence, Esq., F.R.S., President, in the Chair.

Donations.

Philosophical Transactions of the Royal Society, parts 1 and 2 for 1845; parts 1 to 4 for 1846; and parts 1 and 2 for 1847. Presented by that Society.

Annual Report of the Leeds Philosophical Society for 1846 and 1847. Presented by that Society.

Proceedings of the Berwickshire Natural History Club, pp. 197—260. Presented by that Club.

H. T. Stainton, Esq., of Mountsfield, Lewisham, was balloted for and elected a member.

Exhibitions, Memoirs, &c.

Mr. Douglas exhibited on behalf of Mr. Logan a new species of *Porrectaria*, for which he proposed the name of *fasciatopennella*.

Mr. Weir exhibited a specimen of the winter abode of the larvæ of *Porthesia*.

Mr. E. Doubleday exhibited specimens of a remarkable new genus of *Geometridæ*, collected by Mr. Dyson in Caraccas, at an elevation of nearly 10,000 feet above the level of the sea.

A memoir by Mr. Dallas was read on the Hemipterous genus *Pœcilochroma*, White, in which some new species were described.

Mr. Douglas stated that on the preceding day he had seen a specimen of *Vanessa Antiopa* at Penge.

The President called the attention of the meeting to an account of a swarm of *Notonecta glauca*, extending over twenty-five or thirty miles, observed in September, 1846, near the head waters of the Mississippi by Sir G. Simpson, and recorded by him in his Travels. This, he observed, was a remarkable fact, and he believed the first recorded observation of the migration in large swarms of an aquatic insect.

The President also read an extract from the Times newspaper, stating that during the prevalence of the cholera in Russia the bees kept themselves closed up in their hives. This led to a discussion on the sensibility of insects to atmospheric changes.

The President read an extract from the Florist, No. 3, on the winter quarters of the caterpillar which infests the rose bud; from which it appears that they bore into the pith of the dead

branches of the rose, especially the dead spurs remaining where a branch had been cut off, and consequently that a careful removal of these would in a great measure prevent their ravages.

Mr. Westwood remarked, that it was difficult to decide to what species they belonged, and that as yet he was not aware of any Tortricideous larva being known to bore into wood.

Mr. E. Doubleday remarked, that the habits of this species were nearly the same as those of the *Tortrix* of the vine, so beautifully figured and so elaborately described in Audouin's work upon it. That larva forms for its winter habitation a small silken cocoon under the bark of the vine, and comes forth in the spring destroying the young shoots.

1*st May*, 1848.

W. Spence, Esq., F.R.S., President, in the Chair.

Donations.

Genera et Species Trichopterorum, part 1, by Dr. F. A. Kolenati. Presented by the Author.

The Athenæum for February and April, 1848. Presented by the Editor.

Littell's Living Age, part 201. Presented by the Editor.

Boston Journal of Natural History, Vol. V. part 2. Presented by the Society.

Entomologische Zeitung, for January, 1848. Presented by the Entomological Society of Stettin.

Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, Tome XI. part 2. Presented by that Society.

Arthur Christie, Esq., of 9, Stanhope Street, Hyde Park Square, was elected a Member of the Society.

Exhibitions, Memoirs, &c.

Mr. Saunders exhibited some young fruit of the apricot, eaten by the larva of one of the *Tortricidæ*, probably a *Lozotænia*. Also some corks from wine bottles, destroyed by the larva of some Coleopterous insect.

A letter was received from J. C. Bowring, Esq. of Hong Kong, returning thanks for his election as a Corresponding Member of the Society.

Also a letter, addressed by that gentleman to Mr. White, detailing the habits of many species of insects, and some *Myriapoda*, inhabiting that island.

Mr. E. Doubleday read a memoir on some new species of *Geometridæ*, from Caraccas.

The President called the attention of the Members to the subject of the luminosity of *Fulgora laternaria*, remarking that it is desirable to collect all the evidence bearing on the disputed question of the luminousness of this insect. "The following passage (he observed) from Mr. W. H. Edwards's highly interesting 'Voyage up the River Amazon' (January, 1847), is worth quoting.

"In describing a night-scene at Mogoary, twelve miles from Pará, the capital of the province, situated eighty miles from the mouth of the Amazon, in Brazil, Mr. Edwards says, 'Huge moths, those fairest of the insect world, have taken the place of the butterflies, and myriads of fire-flies never weary in their torch-light dance. Far down the road comes on a blaze, steady, streaming like a meteor. It whizzes past, and for an instant the space is illumined, and dewy jewels from the leaves throw back the radiance. It is the lantern-fly, seeking what he himself knows best, by the fiery guide upon his head.'—p. 31.

"Mr. Edwards, with whom I have the pleasure of being personally acquainted, assures me that this is an accurate description of what he himself witnessed; and though he did not capture one of the lantern-flies, all the Brazilians with whom he conversed on the subject agreed in asserting that this insect is certainly and notoriously luminous, the large hollow projection from the head being the part which gives out the light. Mr. Henderson, for example, when Mr. Edwards first landed at Pará, and before he had seen the appearance just described, told him that some night or other he would see a flying insect giving out far more light than the ordinary fire-flies, and gave a description of the insect to which he alluded, which was exactly applicable to the specimen of *Fulgora laternaria* brought to Mr. Edwards when he was at Bara, one thousand miles higher up the Amazon, and upon seeing which Signor Henriquez, of Bara, observed, 'this is a rare insect here, and is the one that is so luminous.'"

The President also read the following communication relative to meal made from vetches, which had been found to be poisonous.

"As it is a duty of this Society to endeavour to throw light on obscure facts in which it is possible that insects may be concerned, I beg to draw your attention to a statement, apparently connected with one of these, made to the Council of the Royal Agricultural

Society, April 12, 1848, of the death of nine pigs belonging to Mr. Bury, of Hanslope Park, Bucks, a few hours after eating porridge made of meal from vetches, bought at Liverpool. 'Professor Way remarked, that the poisonous effect was produced either from mineral poison mixed with the meal, or in consequence of some poisonous quality chemically engendered in the meal itself. He was inclined to think, from such a result in many vegetable substances, that the latter was the case.' Now I would beg to suggest, whether it is not more probable that this poisonous quality in the meal (for I do not think that any mere extrication of gas, as Professor Sewell, of the Royal Veterinary College, suggested, could produce a fatal result so immediate, and on the whole number of pigs) was caused by its having been ground from vetches infested with some *Bruchus*, in its various states of larva, pupa and imago. I am not aware that English vetches (including under this term lentils and tares), which indeed are not very extensively cultivated in this country, are materially affected by any insect; but Mr. Curtis, in his late excellent 'Essay on Pea and Bean Insects,' in the 7th volume of the Journal of the Royal Agricultural Society, informs us, in a note quoted from the Encyclopédie Méthodique, that the lentils and vetches of France are infested by *Bruchus granarius*, as we may reasonably infer are those of other continental countries, or with allied species. Is it not then probable, that as considerable quantities of foreign lentils were imported last year into Liverpool from Egypt, Prussia, &c. that the poisonous meal in question might have been ground from the refuse screenings of this grain, and thus have contained a sufficient quantity of *Bruchus granarius* in its different states to impart noxious properties to it?

"This supposition is rendered probable by three facts,—first, that, as recorded by Amoreux, and quoted in the 'Introduction to Entomology,' individuals in France seem to have been poisoned by eating *Bruchus granarius* in worm-eaten peas; second, that, as stated by Mr. Curtis in the 7th volume of the Journal of the Royal Society of Agriculture, the health of a cabman's horses, fed on Sicilian beans much worm-eaten, was found to be very much deranged; and third, that two fat pigs of Mr. H. Wilson, of Stowlangtoft Hall, as he stated to the Royal Agricultural Society, were both destroyed by being fed for a week on meal ground from damaged rice, purchased at a cheap rate, which it is highly probable abounded in *Calandra oryzæ*, with the known noxious properties of which *Bruchus granarius* may not unreasonably be supposed to partake."

5th June, 1848.

W. Spence, Esq., F.R.S., President, in the Chair.

Donations.

Beiträge zur nähern Kenntniss der Palingenia longicauda, *Olivier*, by Professor C. Cornelius. Presented by the Author.

Linnæa Entomologica, Vol. 3.

Entomologische Zeitung, for 1848, parts 2, 3 and 4. All presented by the Entomological Society of Stettin.

Transactions of the Zoological Society, Vol. 3, part 5;

Proceedings of the Zoological Society, for 1847, pp. 107—242, and for 1848, pp. 1—16. All presented by the Zoological Society.

Exhibitions, Memoirs, &c.

Mr. T. V. Wollaston exhibited a very extensive series of insects of all orders, collected by him in Madeira during the past winter and spring. This collection contains many new and remarkable species, especially of *Coleoptera*, and is the most extensive ever brought from that island.

Mr. Stevens exhibited a small box of insects recently taken in the Isle of Wight, including specimens of *Drypta emarginata*, *Agrotis cinerea*, two new species of *Anacampsis*, &c.; also specimens of *Endromis versicolora* from Sussex, and numerous insects captured in the New Forest, near Lyndhurst, including *Cleora cinctaria*, *Chlorissa viridaria*, and the species of *Psyche* described by Curtis under the name of *Penthophora nigricans*. The specimens of the last named insect were reared from cocoons found on heath and gorse in the neighbourhood of Ringwood and Lyndhurst. Mr. Stevens remarked that the males invariably emerged from the pupa between the hours of five and seven P.M., and that one evening great numbers of males were attracted by a female just emerged from the pupa, in one of his breeding cages, in a garden at a great distance from the heath where they are found. The female, which has only rudiments of legs, does not leave the cocoon until after she has deposited her eggs therein.

Mr. E. Doubleday exhibited specimens of *Zegris Eupheme*, *Colias Aurora*, and other rare European *Lepidoptera*; also a specimen of *Hebomoia Leucippe*; of a new *Rhodocera* from Nepaul, allied to *Rh. Verhuellii*, for which he proposed the name of *Rh. Wallichii*, after its discoverer Dr. Wallich; also the male of *Actias Mœnas*, remarkable for the extreme length of the tails of the posterior wings. (Tab. XV. fig. 1.)

Mr. E. Doubleday then called the attention of the meeting to the structure of the anterior wings in *Zeuxidia Luxeri*, Hübner, a rare butterfly from the Indian archipelago.

In this insect the third median nervule, soon after its origin, throws off a short branch, which is directed upwards, then slightly outward, when it becomes atrophied, and confounded with the fold between the second discoidal and the third median nervule. Mr. E. Doubleday considered this deviation from the usual structure of the wing in the diurnal *Lepidoptera* as of great interest, and likely to assist in ascertaining the true structure of the wings of some of the *Hepiolidæ* and other Heterocerous *Lepidoptera*, which is so much more complicated than that of the *Rhopalocera*. He pointed out the resemblance between this short nervule and the traces of the discoidal nervure and nervules often visible in the cell of the anterior, and sometimes of the posterior wings of the *Heliconidæ*, and some other butterflies; and also that in these insects the discoidal nervure and its nervules are almost always represented by distinct folds, which have by some authors been mistaken for nervules. He considered it of the greatest importance, in reference to the Pterology of insects, to attend strictly to these rudimentary nervules, and to avoid most carefully any careless or inaccurate descriptions of them. He believed that they will be found to indicate either the introduction of an additional element into the structure, or the proximate disappearance of one already existing; and that these changes depended more on the position that the animal occupies in the system of nature, than on any modification in its habits.

Mr. J. F. Stephens exhibited a living larva of *Graphiphora subrosea*, which had been reared from the egg by Mr. Doubleday. Also specimens of *Gracillaria V. flava*, bred from the larvæ found in the wine corks previously exhibited by Mr. E. Doubleday. This insect, he remarked, until within a few years, was very rare in collections, but had latterly been found in plenty by Mr. Bedell in wine cellars. As it differs considerably from the other species of the genus *Gracillaria*, he proposed to separate it from them under the name of *Oinophila*.

Mr. J. W. Douglas exhibited specimens of a new species of *Microsetia*, for which he proposed the name of *Stephensella*.

Mr. Weir remarked that two distinct insects have commonly been confounded in England under the name of *Spinolota trimaculana*, one of which feeds on the whitethorn, the other on the rose.

Mr. Westwood made some observations on the *Penthophera nigricans* of Curtis, showing that it could not be generically asso-

ciated with the type of that genus, *Penth. Morio,* on account of its transformations, the apterous state of the female, the want of palpi, and peculiar veining of the wings in the male. The latter character, as well as the almost obsolete, exarticulate antennæ of the female, likewise remove it from *Psyche fusca,* and the genus *Fumea* of Haworth.

Mr. Westwood accordingly proposed for it the generic name of *Pachythelia,* considering it most nearly allied to the *Oiketicus MacLeayii* of Guilding.

Mr. Westwood thought that, notwithstanding some of the "*Sackträgers*" are evidently related to the *Tineidæ* and *Hepiolidæ*, those under consideration are most allied to some of the *Arctiidæ*.

Mr. Douglas remarked that Mr. Doubleday had at one time thought it possible that this insect was the *Psyche febretta* of Duponchel, but that though it evidently belongs to the same group, he now considers it a distinct species.

3rd July, 1848.

J. F. S. Parry, Esq., F.R.S., Vice-President, in the Chair.

H. Low, Esq., Colonial Secretary, Labuan, was elected a Corresponding Member of the Society.

Exhibitions, Memoirs, &c.

Mr. Ingpen exhibited a specimen of *Papilio Machaon,* which had been two years in the pupa state.

Mr. G. F. Angas exhibited two large boxes containing insects of various orders recently collected by himself in the interior of South Africa. Amongst them were two new species of *Papilio,* two or more new species of *Acræa,* two new genera of *Nymphalidæ*, a magnificent new *Saturnia* of the subgenus *Actias,* and many other exceedingly rare or entirely new insects.

Capt. Parry exhibited a box of *Coleoptera* from Ceylon, containing many rare species.

Mr. W. W. Saunders exhibited a male and female of *Cystosoma Saundersii* from Australia. The female, which was not hitherto known, is remarkable for not having the body inflated as in the male.

Mr. Newport exhibited a new species of the genus *Monodontomerus,* belonging to the family of the *Chalcididæ*, reared from larvæ which he had found in the nests of *Anthophora retusa.* He proposed for it the name of *Monodontomerus nitidus.*

Mr. J. W. Douglas exhibited specimens of *Agrophila sulphurea*, *Argyromyges viminiella*, *A. salicolella*, *A. spiniolella*. *Argyrosetia semifasciella*, *Gracillaria substriga*, and some new species of *Microlepidoptera*.

Mr. Weir exhibited a very large series of *Microlepidoptera*, collected by himself in the vicinity of Tunbridge Wells.

Mr. H. T. Stainton exhibited pupæ of *Argyromyges quercifoliella* and *Arg. sylvella*.

A paper was read "On some remarkable Hermaphrodite British *Lepidoptera*," by Mr. Wing.

A paper was read, being extracts from Zeller's Monograph of the genus *Argyresthia*, published in the Linnæa Entomologica, with notes by Mr. H. T. Stainton.

A requisition for a special meeting of the Society to consider certain alterations of the bye-laws of the Society, signed by six members, was read.

7th August, 1848.

J. F. S. Parry, Esq., F.L.S., Vice-President, in the Chair.

Donations.

Dei Vantaggi che l'Agricoltura può ricavare dallo Studio dell' Entomologia, by Professor Passerini. Presented by the Author.

Frederick Grant, Esq., 15, Sussex Place, Kensington, was elected a member.

Exhibitions, Memoirs, &c.

Mr. J. F. Stephens exhibited a large mass of *Atherix ibis*, about two inches in diameter, found by the Rev. F. W. Hope on the banks of the Severn, at Berwick, near Shrewsbury. This mass was composed of an immense number of individuals, closely adhering together around a small branch.

Mr. J. C. Bowring exhibited two very interesting boxes of insects, chiefly *Coleoptera*, collected by himself at Hong Kong, containing three new species of *Paussus*, a new *Cremastocheilus*, and a very remarkable Coccus-like insect, parasitic upon *Fulgora candelaria*. This last insect led to a considerable discussion as to the order to which it belongs.

Dr. Schaum, who had recently returned from the United States, exhibited a box of insects from those States, containing seven

species of the genus *Cremastocheilus*, of which four were new. Two of these were discovered in South Carolina, by Dr. Zimmermann, and two in the Missouri territory, by Dr. J. Leconte. The three known species were *Cr. canaliculatus*, Kirby, *Cr. castaneæ*, Knoch, and *Cr. Sayii*, Harris. He stated that the *Cr. canaliculatus* of Kirby, which is the *Cr. Hentzii* of Dr. Harris, had hitherto been erroneously considered, both by himself and Dr. Burmeister, to be the *Cr. castaneæ* of Knoch. The true *Cr. castaneæ* had remained hitherto unknown to more modern authors. It is distinguishable from the former species by its much smaller size, and by its more coarsely and sparingly punctured head and thorax. He pointed out that the third species was very near to the *C. variolosus* of Kirby, but differed in the form of the posterior angles of the thorax. He mentioned that besides these, he was acquainted with five other species from North America, thus bringing the actual number of known species from that continent to amount to twelve. These five are, 1st, *Psilocnemis leucosticta*, Burm; 2, *Cremastocheilus Harrisii*, Kirby; 3, a large new species from Indiana, of which fragments exist in Dr. Harris's collection; 4, a species allied to *Cr. variolosus*, which M. Gory had in his collection as *Cr. castaneæ*, and which must be considered the type of his description, and which has not been noticed by any other author; 5, *Cr. Mexicanus*, Schaum. He added, in conclusion, that the habits of the genus were very little known; that he had himself found one species in ants' nests on the Catskill Mountains, and that Professor Haldemann had also found two species in similar situations in Pennsylvania.

Dr. Schaum also exhibited many new or very rare *Coleoptera*, found by himself in his journey through the United States.

Dr. Schaum next exhibited specimens of *Glyptus subtilis*, one of the rarest of the Carabideous insects, which had been found in Western Africa, by Dr. Savage, in the nests of the *Termites*, or white ants; and a drawing of a remarkable *Goliathus*, existing in the collection of Mr. Turner, of Manchester. This specimen, which he considered to be a variety of *Gol. cacicus*, has the head and bands of the thorax almost white, the elytra almost white, wanting the bluish silvery hue common in *Gol. cacicus*, and having the humeral and apical black patches almost touching one another; thus seeming to form a link between *Gol. Drurii* and *Gol. cacicus*.

Mr. Westwood remarked, that after a very careful examination of many specimens of both species, he could not indicate any

constant difference of form between them, except that *Gol. cacicus* has the legs more slender than *Gol. Drurii*, and that the angulations of the head and thorax are somewhat different in the two species.

Mr. J. W. Douglas exhibited the pupæ of *Spilonota fœnella*, in the stems of *Artemisia campestris*.

Mr. Sheppard exhibited some remarkable varieties of *Melitæa cinxia*, *Thecla pruni*, and *Graphiphora subrosea*.

The following note by Dr. Schaum was read: " Since my description of *Platygenia exarata* was published in the fifth volume of the Transactions of this Society, I have had an opportunity of seeing the male of that species in the collection of Dr. Zimmermann, of Colombia, South Carolina. On this sex the inside of the hind tibiæ has a thick brush of black hairs; the claws of the anterior tarsi are simple, while they are toothed at the base in *Plat. barbata*, a fact showing that this character has here only a specific, not a generic value.

" I take advantage of this opportunity to correct an error of the press in my description of *Pl. exarata*, p. 76. In the third line from below of that page, instead of ' proves that the specimen is a *male*,' read ' *female* ;' and p. 74, line 20, read ' *margine*,' not ' *marginato*.' "

Mr. E. Doubleday made some remarks upon the very valuable collection of *Coleoptera*, which Dr. Schaum had formed during his journey in the United States; especially referring to the geographical distribution of the species, a large number of which have a very wide range. Many of those found by Dr. Schaum in Louisiana, having been taken by himself both in the State of New York and in East Florida, showing a range of above nine hundred miles from North to South, and above one thousand miles from East to West. This range was the more remarkable from the well known fact that the climate changes more in a given number of degrees of latitude in the United States than in Europe.

A requisition for a special general meeting to consider certain alterations in the Bye-Laws, signed by six members, was read.

4th September, 1848.

W. Spence, Esq., F.R.S., President, in the Chair.

Donations.

Istoria dei Bruci et Larvi della Lithosia Caniola. By Professor C. Passerini. Presented by the Author.

Journal of the Royal Agricultural Society of England, No. 21, for August, 1848. Presented by that Society.

Annals of the New York Lyceum. Vol. 4. Parts 10 & 11. Presented by that Institution.

Materials for a Fauna and Flora of Swansea, and the Neighbourhood. By L. Weston Dilwyn, Esq. Presented by the Author.

Exhibitions, Memoirs, &c.

Mr. J. F. Stephens exhibited two species of *Coccus*, one found in great profusion on *Ribes sanguineum*, the other on the apple tree; and, for comparison with these, he also exhibited specimens of the species infesting the orange tree.

Mr. S. Stevens exhibited a remarkable variety of *Polyommatus Adonis*, taken at Torquay, in which the upper surface of the wing was of a fulvous colour; also a specimen of *Deilephila Livornica (Esp.)* from the same locality. He likewise exhibited numerous beautifully-preserved specimens of *Lepidoptera*, taken by himself in Devonshire, amongst which were *Hypena Crassalis*, *Eupithecia nigro-punctata*, *Margaritia longalis*, *Anticlea sinuata*, *Emmelesia bifasciata*, *Xanthosctia inopiana*, and other species, rare in Great Britain. He stated that the larva of the last-named species feeds on a species of *Pulicaria*.

Mr. Westwood informed the Society, that he had recently made some very interesting observations on *Sitaris humeralis*, which he hoped shortly to be able to publish. He brought to the Meeting many specimens captured by himself in Oxfordshire, for distribution amongst the members.

Mr. E. Doubleday read a description of a new species of *Gonepteryx*, of the section for which Dr. Boisduval had proposed the name of *Dercas*.

Gonepteryx Wallichii.

Gon. Wallichi: *Alis omnibus lætè flavis, anticis apice acuminato nigro, macula pone medium rotundata nigra;* posticis rotundatis.

Exp. alar. 2½ unc. vel 62 millim. Habitat India Sept.

Head black. *Antennæ* reddish. *Thorax* black, clothed thinly with yellow hairs. *Anterior wings* acuminate, falcate, the outer margin slightly sinuate below the apex, above pale bright yellow, the apex marked with a black patch trisinuate internally, the middle sinus deep, the others much slighter; the termination of the costal nervure, and also of the first and second subcostal nervules, marked with a small black dot; two small black dots on the outer margin, and a large rounded spot, bordered below with ferruginous, between the first and second median nervules, not far from their origin. Posterior wings rounded, pale, bright yellow, the terminations of the nervules marked with a small black dot. Below all the wings paler than above, sprinkled with small ferruginous atoms, the discocellular nervule of both wings marked with a geminate ferruginous spot, bepupilled with silver; the anterior wings marked with a silvery cloud, from which a faint ferruginous line runs across the wings nearly to the anal angle, touching a spot in place of the rounded spot of the upper surface, but of a paler colour. Legs nearly white.

This species may be known from *Gonepteryx Verhuellii* by its rounded posterior wings, and from *Gon. Lycorias* by the large spot of the anterior wings and other characters.

2nd October, 1848.

W. Spence, Esq., F.R.S., President, in the Chair.

Donations.

Bulletin de la Société Impériale des Naturalistes de Moscou. Part 2, for 1847. Presented by that Society.

Entomologische Zeitung, for June, 1848. Presented by the Entomological Society of Stettin.

Journal of the Boston Natural History Society. Vol. 5, part 4. Presented by that Society.

Two specimens of *Lamia Textor*, found near Bristol. Presented by Mr. Jacques.

Exhibitions, Memoirs, &c.

Mr. J. F. Stephens exhibited a specimen of fir timber, from Charing, in Kent, perforated obliquely downwards by *Sirex gigas* and *Sirex juvencus;* and stated that the perfect insects had made their appearance throughout the months of June, July, August, and September.

Mr. J. J. Weir exhibited specimens of *Cynœda dentalis*, taken by himself at Lewes; also a box, containing numerous species of *Lepidoptera*, some of them rare, beaten from the thatch of an out-building, their winter quarters.

Mr. Wollaston exhibited a box of *Coleoptera* collected in the neighbourhood of Colombo, Ceylon, amongst which were many rare species.

Mr. S. Stevens exhibited a box, containing many species of *Coleoptera*, rare in Britain, amongst which were *Lixus bicolor*, *Hypera fasciculosa*, *Platyonomus mixtus*, all found on *Erodium cicutarium;* also *Lixus angustatus*, *Sitona Waterhousei*, *Acalles roboris*, and a species of *Lebia*, believed to be undescribed, found near Deal; also specimens of amber, containing insects found on the sea-shore at Deal and Hastings.

The Secretary read a letter from Mr. Jacques, stating that he had captured twenty-one specimens of *Lamia textor* near Bristol, that he believed to be a nocturnal insect, never having met with it before 7 P.M., and that he had taken the specimens mentioned by examining the branches of willows after dark.

The following extract of a letter from W. Thompson, Esq., of Belfast, on the habits of *Aleyrodes Phillyreæ* was read:—

"Although you are not to expect any thing entomological from me, I may mention my being lately attracted by the beautiful *Aleyrodes Phillyreæ*. Having remarked from a little distance the very lucid and even black appearance of a fine large plant of *Phillyrea latifolia*, I went to ascertain the cause, and found hosts of this beautiful creature on the under side of the leaves, to which only the perfect insect, as well as in its other stages, was attached, just after the manner of *Aphides*. If you have not seen the species, you can imagine the beautiful sight afforded on my shaking the plant, when hundreds of minute moths (as it were), not exceeding a line and a half in length, and of a snowy whiteness, hovered over the gloomy *Phillyrea*. I visited the plant yesterday, and found the *Aleyrodes* just as I had seen it a month before. The *Phillyrea* however was the worse, a few of the leaves being

killed, and others tending towards decay. Not a leaf, excepting the very few young ones put forth, but is affected, in hue at least. The *Phillyrca* is in the midst of shrubs of various kinds, none of which, nor any other plant of the same species in the grounds, is attacked."

The alterations proposed to be made in the Bye-Laws were read.

6th November, 1848.

W. Spence, Esq., F.R.S., President, in the Chair.

Donations.

The Athenæum, for March to September inclusive. Presented by the Editors.

Annales de la Société Linnéenne de Lyon. Vol. 1, 1845-6. Presented by that Society.

Catalogue des Insectes recueillies par M. Lehmann. By M. Ménétriés. Presented by the Author.

A large Series of British *Lepidoptera*. Presented by G. Bedell, Esq.

The proposed alterations in the Bye-Laws were agreed to.

Mr. I. W. Douglas exhibited larvæ of *Trogosita Mauritanica* which had been found in packages of silks from India, to which they had done much damage.

Mr. W. Thompson sent, for exhibition, living larvæ of *Aleyrodes Phillyreæ*.

Mr. Stainton exhibited a very extensive series of varieties of *Pœcilochroma piceana*, pointing out the connecting links between those varieties which have been described as species, viz. *Pœc. piceana* (Haw.), *Pœc. semifuscana* (Stevens), and *Pœc. vittana*, Curtis.

Mr. Weaver exhibited the cocoons of a species of *Psyche*, supposed to be new to Britain.

Mr. Waterhouse exhibited two specimens of a species of *Gyriosomus* (section *Heteromera*, family *Nyctelidæ*), from Chili, which, having a general resemblance to the *Gyr. Hopii*, differed in being larger, in having the thorax more convex above, being destitute of the transverse depression on the hinder part, and lastly, in wanting the white longitudinal lines on the hinder part of the elytra. In the specimens laid before the meeting, the whole sur-

face of the elytra was studded with small irregular depressions, and these were clothed with a white substance, as are the depressions of *Gyr. Hopei.*

Mr. E. Doubleday made some remarks on the subject of local varieties, and the representation of one species by another in distant localities. He especially mentioned a species of *Papilio*, from California, recently added to the collection of the British Museum, which shows a marked affinity both to *P. Asterias* and *P. Machaon*, scarcely differing from the latter except in its brighter colouring and in having the red spot at the anal angle of the posterior wings pupilled with black as in *P. Asterias*, to some of the varieties of which it bears a resemblance almost as close as to *P. Machaon.*

Mr. J. F. Stephens remarked, that in many species of *Lepidoptera* the specimens from Scotland were constantly darker than the English ones. He also alluded to the minute but constant differences to be found between the European and American specimens of certain *Lepidoptera*, as, for example, *Vanessa Atalanta* and *Lycæna Phlæas.*

A paper was read by Mr. H. T. Stainton on the Synonyms of *Tinea Festaliella* of Hübner.

4th December, 1848.

W. Spence, Esq., F.R.S., President, in the Chair.

Donations.

Three boxes of Insects of various orders from South Australia. Presented by W. Spence, Esq., the President of the Society.

Reports of the British Association for the Advancement of Science, for the years 1843-4-5-6-7. Also presented by the President.

Entomologische Zeitung, for August and September, 1848. Presented by the Entomological Society of Stettin.

Annales de la Société Royale d'Agriculture, &c. de Lyon. Presented by that Society.

Bulletin de l'Académie Royale de Belgique for 1847 and 1848;

Annuaire de l'Académie Royale de Belgique for 1848;

Mémoires Couronnés et Mémoires des Savans Etrangers, publiés par l'Academie Royale de Belgique, for 1848. All presented by that Society.

Boston Journal of Natural History. Vol. 5, part 4. Presented by the Boston Natural History Society.

Annales de la Société Entomologique de France. Vol. 6, parts 1 and 2. Presented by that Society.

La Muscardine, by M. Guérin-Ménéville;

Necéssité d'introduire l'Etude de la Zoologie dans l'Enseignement Agricole, by M. Guérin-Ménéville;

Essai sur les Lépidoptères du Genre Bombyx qui donnent ou qui donneront de la Soie, by M. Guérin Ménéville;

Extrait du Compte Rendu de la Séance Publique et Annuelle de Société Royale et Centrale d'Agriculture, qui a décerné à M. le Dr. Eu. Robert le Prix, institué pour la découverte et mise en pratique des moyens propres à détruire les Insectes nuisibles aux Forets, &c., by M. Guérin Ménéville. All presented by the Author.

Insecta Caffraria. Pars 1ma. By C. H. Bohemann. Presented by the Author.

Observations sur quelques Genres de Carabiques, by M. le Baron Chaudoir;

Enumeration des Carabiques et Hydrocanthares du Caucase, by M. le Baron Chaudoir. Both presented by the Author.

Exhibitions, Memoirs, &c.

Mr. E. Doubleday informed the meeting, that the *Saturnia*, from South Africa, which he had exhibited at a previous meeting believing it to be new, was described about a year since by Dr. Boisduval, under the name of *Saturnia Acaciæ*, in the "Voyage de Delegorgue."

He also stated that the *Saturnia*, which he then considered to be the male of *Saturnia* (*Actias*) *Mænas*, was, he believed, a distinct species. The specimen in the British Museum is much faded, and consequently it is difficult to say what might have been its colour; but he had lately seen two perfect specimens in a collection of insects from Silhet, now unfortunately on the road to Brody, in Galicia, the collection having been purchased by Count Mnizesch. He would propose to call it

Saturnia Leto.

Sat. Leto: *Alis anticis elongatis, triangularibus, posticis parvis, sub-trigonis, cauda longissima, apice dilatata, instructis: omnes pallide viridi-flavidis, basi, linea tenui, nudata, transversa, marginibusque externis plus minusve, brunneis: anticis lunula magna, posticis parva instructis.*

Exp. alar. 6 unc. 3 lin. del. 156 mill. Hab. India Orientali.

Anterior wings triangular, the apex acute; the anterior margin more than double the length of the inner; the outer margin nearly straight, three-fourths the length of the anterior; pale, dull, greenish yellow: the costa, the base beyond the origin of the first median nervule, an indistinct, angular, transverse striga beyond the middle, a patch near the apex, and a larger one on the outer magin near the anal angle, pale brown: the end of the cell marked by large crescent-shaped lunule, dark internally and above. Posterior wings short, subtriangular, the anal angle produced into a long tail, more than double the length of the wing, very slender, enlarged before the apex; pale dull greenish yellow: the base, an angular striga near the outer margin, the outer margin and the narrow part of the tail, except internally near the base, pale brown.

Head, thorax and abdomen greenish yellow, the prothorax brown in front.

In the collections of the British Museum, Count Mnizesch, &c.

Mr. Westwood brought for distribution amongst the members numerous specimens of *Cucujus piceus*.

Mr. White exhibited a box containing a selection from a collection of insects made in New Zealand by Mr. Churton; amongst which were a new genus of *Scaritidæ*, a species of *Dircæa*, a new genus near to *Metopon*, a new genus of *Prionidæ*, a new species of *Gryllotalpa*, and other new insects.

Mr. E. Doubleday exhibited a box containing a series of *Lepidoptera* from the same collection, mostly new species; also a remarkable cocoon of a Lepidopterous insect, probably allied to the *Lithosiidæ*, but which much resembled in structure that of *Dictyopeia Catenaria*. This cocoon is of an oval form, composed of delicate silken net, of a rose colour, and is suspended by a long thread from a leaf. The cocoon and perfect insect were sent from Parà by Messrs. Wallace and Bates.

Mr. Maitland exhibited specimens of *Polia Lichenea* and *Agrotis lunigera*, captured near Ventnor.

Mr. Bond exhibited specimens of an apparently new *Nonagria*, and also of *Depressaria Angelicella* (Hübn.), and *Depressaria subpropinquella*, Stainton: also a specimen of *Heliothis Armigera*, captured near Dorking, September 20th, 1848.

Mr. Douglas exhibited specimens of *Anacampsis alacella*, *An. peliella*, and *An. lentiginosella*.

Mr. S. Stevens exhibited specimens of *Oxypate gelatella*, taken in Fulham Fields.

A letter was read from Mr. Walton, communicating a letter from Mr. Carlson, containing a short biography of M. Schönherr. Mr. Carlson states—

" 4, Aberdeen Place, Maida Hill,
August 4, 1848.

" My dear Sir,—According to your wish I have procured from Sweden a sketch of my late uncle, Mr. Schönherr's life, which I have translated into English for you, leaving to you to make whatever use of it you think proper. In case you should decide upon publishing it in some periodical, the English requires a little polishing, which I hope you will be kind enough to undertake.

" One of the sons-in-law of Mr. Schönherr, who is Professor of Theology at the University of Upsala, informs me that he is engaged to publish the life of Mr. Schönherr in the form of a book or pamphlet, which will probably be ready by the end of this year.

" The enclosed sketch is taken from a recent publication called " Biographical Lexicon of celebrated Swedish Men," to the editor of which Mr. Schönherr himself has given the principal facts, which consequently can be relied upon.

" Believe me, my dear sir,
yours very faithfully,
G. W. Carlson.

" To John Walton, Esq.

" Carl Johan Schonherr.

" Born in Stockholm, June 10th, 1772. His father, Christian Schönherr, who died in 1783, was a native of Saxony, who settled in Sweden, where he became a silk manufacturer in the city of Stockholm. After his death the business was carried on by his widow, Louisa Christina Herrman, also a native of Germany, until 1791, when their son Carl Johan, having finished his education, became sole manager of this silk manufactury, which had been established in Stockholm by his father. By great talent and industry Schönherr improved the manufactory very considerably, so that the number of looms in full operation amounted to seventy-two, on which more than 200 hands were employed. In 1802 he was elected Deputy of the Silk-Mercers' Company, and in 1809 was returned to the Diet as one of the Members for the City of Stock-

holm. He retired from business in 1811; and having bought the beautiful estate of Sparresäter in Westrogothia, he removed there with his family in 1812. His Majesty, the King of Sweden, made him Counsellor of Commerce in 1812, Knight of the Royal Order of Polar Star in 1829, and Knight Commander of the Royal Order of Wasa in 1846.

"Without any previous instruction, Schönherr began as early as 1784 to collect insects, and became soon intimately acquainted with distinguished Entomologists, particularly Major Gyllenhaal and Professor Quensel, of whom the latter encouraged him to publish his "Synonymia Insectorum" in 1806. What most particularly induced him to undertake this work was the uncertainty and confusion which prevailed in the science of Entomology on account of the different systems and names which had been adopted, and it was his study to point out and arrange the different names and places which in the various Entomological systems had by different authors been given to precisely the same species. This plan was soon enlarged by the publication of more accurate systematic definitions and descriptions of new species. He also made a new and original system for the *Curculionides*, which now is generally adopted. Linnæus knew only a little more than 100 species of this family, and by the authors who preceded Schönherr, as Fabricius, Olivier, &c., only 700, or at most 800 species, were described and confusedly put together. This circumstance, in addition to the vast number of new discoveries in this branch of Entomology, made it necessary to systematize *de novo*, which arduous undertaking was performed by Schönherr in his work which has been published by the title "Genera et Species Curculionidum," where more than 7000 different species have been described, and divided in various groups among 644 new genera. Schönherr spent about thirty years' incessant labour on this work, during which time he has kept up a most extensive correspondence with the principal Entomologists, not only in all parts of Europe, but also in Asia and America, who continually communicated to him their discoveries and observations, and many distinguished Entomologists assisted him in special parts of the work, without which assistance it could never have been brought to that state of perfection which it now possesses. By a testamentary disposition Schönherr has presented his rich and beautiful collection of insects, one of the best and most accurately arranged in Europe, to the Royal Society of Stockholm, of which learned body he had been a member since 1809.

" Schönherr distinguished himself also by agricultural pursuits, in cultivating land on his estate, clearing stony ground, draining, &c. He also for a long course of years made experiments to naturalize maize in Sweden.

" Schönherr was struck by a fit of apoplexy, which in a few days ended his life on the 28th March, 1848, at his estate of Sparresäter.

" He was twice married; first in 1795, to Helena Catherina Ferelius (born in London, where her father was minister of the Swedish Church, Princes' Square, Ratcliff Highway, afterwards Archdeacon in Sweden), by whom he had one son and two daughters; secondly, in 1811, to Benedicta Charlotta Bilbery, daughter of Archdeacon E. Bilbery), by whom he had five daughters.

" Schönherr was honorary and corresponding member of more than twenty learned and scientific societies in Europe, America and other parts of the world.

" His portrait has been twice lithographed.

" Besides his well known Entomological works, Schönherr published in the Swedish language various essays on agriculture and manufacture."

Mr. E. Doubleday read an extract from a letter he had received from Dr. Schaum announcing the death of Dr. Erichson.

A paper by Mr. Westwood, on new species of *Cetoniadæ* from India, was read; also

A paper by Captain Parry, containing descriptions of some new *Coleoptera*. This paper was accompanied by a plate presented by the Author; also

A paper by Mr. Douglas, on the Genus *Gelechia* of Zeller.

A memoir on the Genera *Depressaria* and *Exairetia*, containing descriptions of nine new species, by Mr. H. T. Stainton, was read.

Mr. E. Doubleday remarked, on the subject of the memoirs on *Microlepidoptera* by Zeller and others, that as yet few genera of nocturnal *Lepidoptera* have been correctly and clearly characterized; insects of this order having rarely been investigated in the same searching manner that is usual in *Coleoptera*, *Hymenoptera*, and some other orders. He was, however, happy to find that more attention was now bestowed on the characters furnished by the palpi, wings and legs.

A discussion ensued, in which some of Mr. E. Doubleday's remarks were objected to by Messrs. Waterhouse and Douglas as too severe and sweeping.

1st January, 1849.

W. Spence, Esq., F.R.S., President, in the Chair.

The President announced that the Council recommended that the following gentlemen be removed from the Council at the ensuing Anniversary, viz., A. Ingpen, Esq.; G. Newport, Esq.; J. F. S. Parry, Esq.; and J. O. Westwood, Esq.

And that the following gentlemen be elected into the Council, viz.:—

Th. Desvignes, Esq.; H. T. Stainton, Esq.; J. Walton, Esq.; and G. Waterhouse, Esq.

And also that the following gentlemen be elected Officers of the Society for the following year, viz.:—

G. R. Waterhouse, Esq., President;

W. Yarrell, Esq., Treasurer;

E. Doubleday, Esq.; W. F. Evans, Esq., Secretaries.

The following gentlemen were nominated by the President as Auditors, viz.:—

J. W. Douglas, Esq.	H. T. Stainton, Esq.
A. Ingpen, Esq.	J. Walton, Esq.
W. W. Saunders, Esq.	G. R. Waterhouse, Esq.

Donations.

A very beautiful and valuable collection of Indian insects, collected by Mrs. M. Hamilton. Presented by Mrs. M. Hamilton.

John Dawson, Esq., of Carron, was elected a subscriber.

Exhibitions, Memoirs, &c.

Mr. W. W. Saunders exhibited a leaf of *Eucalyptus*, having on it some scale insects of remarkable character.

Mr. J. W. Douglas exhibited the cocoon and pupa of *Oxypate Gelatella*, found by Mr. May under the bark of the whitethorn in Fulham Fields. He also read the following letter from Mr. May:—

"26, Pembroke Place, Vauxhall Bridge Road,
December 28, 1848.

"Dear Sir,—I have enclosed the cocoon of *Oxypate Gelatella*, and yesterday again visited the spot where I captured the insects, for the purpose of making a closer observation on their habits; and the result is nearly the same as I mentioned to you. The

larvæ are internal feeders, living principally in the decayed branches of whitethorn, and in a great many instances under the bark of the living stem. The cocoon spun under the bark is curiously woven, as you will perceive in the specimen I have sent; it is a little injured by removing it from the tree.

"I am, dear sir, yours truly,

"W. May."

And the following translation of Madame Lienig's account of the larva, published in the Isis for 1846, which agrees with Freyer's account and figure of the larva and pupa:—"The larva lives in May and June on whitethorn, currant bushes, all orchard trees, spiræa, barberry, elms and raspberry. It is when young light-white-grey-greenish, with black head and black fore-half of the thorax; legs blackish. When full grown it is light grass-greenish, with whitish long stripes on the back and sides; legs black; the last pair always without knobby thickening. It draws together the leaves intricately, and makes a tubular canal, perhaps an inch long, of white web, which, fast, hard and like net work, is perforated. In this canal it changes to a pupa in captivity. On the slightest touching, the slender very lively larva glides briskly above and below. The pupa, which, after the transformation, is grass-green, becomes later of a brighter grass-green. The insect appears often as early as the beginning of September, after it has laid ten weeks in the pupa, and is very common in the pastorate." He remarked that the discrepancies in these accounts rendered it doubtful if our insect be identical with Lienig's and Freyer's.

The President read a letter inserted in the Barbadoes Agricultural Reporter of Nov. 8, 1848 (p. 186), from John Davy, Esq., M. D., F. R. S., containing observations on the disease called the "worm," by which the sweet potatoes (*Batatas edulis*) grown in that island are attacked. Dr. Davy found in the interior of the potatoes sent him small white hexapod larvæ, solitary and of various sizes, intermediate between, being barely visible to the naked eye, and a quarter of an inch in length, their full dimensions. He was not able to detect any ova, probably from their minuteness and similarity to the starch-cells of the root. He also found in the interior of the root a small beetle, apparently the perfect state of the larva, and another in a sound portion of the tuber, with its head included in the substance of the potato, in the act of penetrating it, probably for the purpose of depositing its eggs; and he noticed small holes on the surface, appearing to be the incipient attempts of the beetle to enter the tuber for this purpose. The course of the larva in feeding is marked by neigh-

bouring discoloration, first greenish, afterwards brown, spreading to a distance from the line of perforation, and gradually becoming fainter. The diseased part emits a peculiar odour, characteristic of the taint and reminding him of that of sweet orris root, but is hardly distinguishable by the taste from the sound portion, though seeming to leave a just perceptible acrid after-taste.

With regard to remedies for the disease, Dr. Davy found that immersion of the larvæ and beetles in lime water was fatal to both in a few hours; and hence he suggests immersing the potatoes beginning to be diseased in this liquid for a sufficient time, and then drying them by exposure to the sun and wind. He also suggests as remedies immersing the diseased potatoes in very dilute sulphuric acid and in a strong brine of salt, after being cut in halves and quarters. The insect confines its attack to the sweet potatoe, not being found either in the yam or eddoe; and the "vine" of the diseased potatoe remains strong and vigorous, being unaffected by the state of the tuber, whose function is not to aid in the growth of the parent plant, but to supply nourishment to young ones growing from it.

The President stated that the beetle sent by Dr. Davy to the Society is a small species of the vast tribe of *Curculionidæ*, not exactly referable to any of the genera in the collection of the British Museum, with which Mr. Waterhouse has compared it, but were nearly allied to *Ceutorhynchus* than any other. As it is most probably a new species, it is proposed to call it *C. Batatæ*, and its specific character will be given by Mr. Waterhouse.

The President also exhibited specimens of a *Calandra* allied to *Cal. Oryzæ*, which destroys the grain of *Sorghum vulgare*.

Mr. S. Stevens exhibited a box of insects collected at Parà by Messrs. Wallace and Bates, containing many rare and valuable specimens.

An extract of a letter from Brazil, addressed to Mr. W. F. Evans, on the subject of the luminosity of *Fulgora laternaria*, was read. The writer, though he had never seen the insect shine, yet believed in its luminosity.

Anniversary Meeting.

22nd January, 1849.

W. Spence, Esq., F.R.S., President, in the Chair.

The portion of the Bye-Laws of the Society relative to the election of the Council and Officers having been read,—

The President announced that since the balloting papers were printed, Mr. Evans had informed the Council that want of leisure would compel him to decline undertaking the office of Secretary, and that the Council recommended that Mr. J. W. Douglas should be elected in his stead.

The Auditor's report was read, and during the ballot the President delivered an address, which he was requested to allow to be printed. This he informed the Society he would cause to be done at his own expense for distribution among the members and their friends.

The Scrutineers announced that—

Th. Desvignes, Esq.	J. Walton, Esq.
H. T. Stainton, Esq.	G. R. Waterhouse, Esq.

had been elected into the Council in the room of—

A. Ingpen, Esq.	J. F. S. Parry, Esq.
G. Newport, Esq.	J. O. Westwood, Esq.

And that the following gentlemen were elected Officers for the ensuing year:—

G. R. Waterhouse, Esq., President;

W. Yarrell, Esq., Treasurer;

E. Doubleday, Esq.; J. W. Douglas, Esq., Secretaries.

A vote of thanks to the President for his great services to the Society was carried by acclamation.

Votes of thanks were given to the Treasurer, the Secretaries and the retiring Members of Council.

5th February, 1849.

G. R. Waterhouse, Esq., President, in the Chair.

W. S. Dallas, F.L.S., Cloudesley Square, Islington, and J. Lee, Esq., L.L.D., F.R.S., &c., Hartwell House, Aylesbury, were elected members; and

G. Bedell, Esq., Kent Road;

H. Jobson, Esq., Carron, Stirlingshire;

W. F. Saunders, Esq., East Hill, Wandsworth;

W. Bell, Esq., M.D., Albemarle Street;

were elected subscribers.

Exhibitions, Memoirs, &c.

Mr. White, on behalf of Mr. Whittingham, exhibited a specimen of *Velleius dilatatus* found by that gentleman at the root of a tree near Wanstead.

Mr. Westwood exhibited a larva, supposed to be that of *Velleius dilatatus*, and also the larvæ of some species of *Volucella*, of which numerous specimens had been found by Professor Henslow in a hornet's nest.

Mr. Westwood exhibited drawings of a new genus of *Aphidæ*, which he proposed to call *Smynthurodes Betæ*, having found them living in small communities on the roots of the common beet in January last.

Mr. H. T. Stainton exhibited specimens of the true *Cucullia Lactucæ*, which had been sent to Mr. Doubleday by M. A. Pierret; and he pointed out that they were clearly distinct from the variety of *Cucullia umbratica*, which had been called by this name in England.

Mr. Douglas exhibited living larvæ of one of the *Tineidæ*, found feeding on the dried poppy leaves in a chest of opium; also specimens of what probably is the perfect insect of these larvæ.

He also exhibited a specimen of *Glæa erythrocephala*, (var. *glabra*, Duponchel,) taken last autumn by H. Cooke, Esq., of Brighton, being the first instance of its occurrence in England.

Capt. Parry exhibited, on behalf of —— Turner, Esq., of Manchester, the specimen of *Goliathus* mentioned last year by Dr. Schaum at the August meeting.

A communication was read from C. A. Wilson, Esq., of Adelaide, announcing that he sent a collection of insects from that place to the Society, and also containing many interesting remarks on their economy.

Mr. Gould mentioned that, in Australia, a species of *Coccus* was the principal food of one of the *Platycerci*.

Mr. White exhibited a remarkable spider's nest brought from Jamaica by Mr. Gosse, which was very interesting, as serving both for the receptacle for the eggs and the residence of the female.

A paper by Mr. Dallas, on some new *Hemiptera* from Bhotan, was read.

Mr. W. W. Saunders read a monograph of the genus *Erycina*, containing descriptions of many new species, and illustrated by two plates, which he presented to the Society.

5th March, 1849.

G. R. Waterhouse, Esq., President, in the Chair.,

H. F. Farr, Esq., Park Lane, Bath;
J. H. Vaughan, Esq., Red Land, Bristol, and
W. J. Wild, Esq., Herne Hill, Camberwell,
were elected members; and
H. Cooke, Esq., 183, Western Road, Brighton;
G. Ingall, Esq., 81, High Street, Borough;
Thos. Ingall, Esq., 16, Park Road, Stockwell Park;
A. Maitland, Esq., Torrington Place, Torrington Square;
were elected subscribers.

Exhibitions, Memoirs, &c.

Mr. Westwood informed the meeting that the vacancy at the Berlin Museum, caused by the lamented death of Dr. Erichson, had been filled up by the appointment of a local Entomologist, whose name was all but unknown to science. Mr. Westwood added, that he was sure that all present who knew Dr. Schaum would lament that he had been passed over in the appointment to a place for which his great talents so eminently fitted him.

Mr. Westwood read a letter from W. Atkinson, Esq., on the subject of a larva which had done very great damage by destroying the corks of wine bottles, which Mr. Atkinson appeared to consider Coleopterous, but which Mr. Westwood considered to be identical with those exhibited by Mr. E. Doubleday last year, which proved to be those of *Gracillaria V. flava*.

Mr. Bedell remarked, that though *Gracillaria V. flava* is very common in wine vaults, he had always considered that the food of its larvæ was not the wine corks, but a fungus.

The President remarked, that he had found *Trogosita Mauritanica* feeding on cork.

Mr. Westwood exhibited drawings of a remarkable insect which

had done much mischief to peach trees in forcing houses. It was a small Aphis-like insect, probably in the pupa state, enclosed in a cottony cocoon. It had, apparently, no mouth; in this respect resembling the males of *Coccus*. Nothing similar, he remarked, had yet been observed amongst the *Aphidæ*, whose pupæ were always active, and formed no cocoon.

Mr. E. Doubleday remarked, that Mr. Ingall had some time since pointed out that the males of *Lachnus Quercus* had no mouth.

Mr. Bond exhibited a collection of insects formed on the Bundarra River, about 400 miles from Sydney, in which Mr. Westwood pointed out some fine *Pambori*, two new species of *Carenum*, a new species of *Cerapterus*, a new genus of *Helopidæ*, and many other new or rare species.

Mr. White exhibited a specimen of a *Cerapterus* from Port Natal, resembling *C. Smithii*, but wanting the white spot on the elytra.

Mr. Westwood read a paper on a new genus of *Helopidæ*, for which he proposed the name of *Prophanes;* also descriptions of two new species of *Carenum*.

2nd April, 1849.

G. R. Waterhouse, Esq., President, in the Chair.

Donations.

Entomologische Zeitung, for 1848. Presented by the Entomological Society of Stettin.

The Athenæum parts for 1848, as far as September. Presented by the Editor.

Four Volumes of the Transactions of the Literary and Philosophical Society of Liverpool. Presented by that Society.

A most valuable Collection of Insects from Adelaide, South Australia. Presented by C. A. Wilson, Esq.

A Collection of British *Lepidoptera*. Presented by H. T. Stainton, Esq.

Edward Newman, Esq., F.L.S., F.Z.S., Hanover Street, Rye Lane, Peckham, and

S. J. Wilkinson, Esq., of London,

were elected members; and

James L. Michael, Esq., Red Lion Square, London;

Mrs. Vines, Lyndhurst, Hants;

J. P. G. Smith, Esq., Liverpool;

John F. Burton, Esq., Lincoln;

Nicholas Cooke, Esq., Warrington;

were elected subscribers.

Exhibitions, Memoirs, &c.

Mr. Westwood read descriptions of two new genera of *Coleoptera*, for which he proposed the names of *Erichsonia Dentifrons* and *Cossyphodes Wollastonii;* also descriptions of some new Indian *Hemiptera*.

Mr. H. T. Stainton read an Inquiry from Herr Zeller on the subject of the *P. Cinxia* of Linné, some doubts having been raised as to its identity with our *Melitæa Cinxia*. Mr. Stainton stated that he had examined the specimen in the Linnæan Cabinet, which is the species known to us as *Melitæa Cinxia*, the *P. Delia* of the Wiener Verzeichniss, and which still retains the label of Linné.

Mr. J. W. Douglas stated that he had recently been informed by Mr. Doubleday that he had bred last year the rare *Phoxopteris upupana* of Treitschke; and that Mr. B. Standish had last year captured at Leith Hill the true *P. Sauciana* of Hübner.

Mr. J. F. Stephens exhibited a living specimen of *Pygæra Bucephala* sent to him by Mr. Doubleday. This specimen was one of several which had been found last week at Epping, and had been sent to him by Mr. Doubleday as a remarkable instance of the early occurrence of the insect, the general time for its appearance being June.

Mr. Westwood called the attention of the meeting to a specimen of the rare *Cerapterus Macleayii*, which was amongst the insects presented by Mr. Wilson; this species, though figured by Donovan some forty years ago, not having since occurred.

7th May, 1849.

G. R. Waterhouse, Esq., President, in the Chair.

M. Chevrolat, Vice-President of the Entomological Society of France, was present at the meeting.

Donations.

A cabinet of seventy-four drawers. Presented by F. Bond, Esq.

Generum et Specierum Curculionidum Catalogus. By M. H. Jekel. Presented by the Author.

Two Copies of a Systematic Catalogue of the British Tineidæ and Pterophoridæ. By H. T. Stainton, Esq. Presented by the Author.

The Athenæum, from October, 1848, to April, 1849, inclusive. Presented by the Editor.

Du Système Nerveux chez les Invertébrés dans ses Rapports avec la Classification de ces Animaux. Par M. Emile Blanchard. Presented by the Author.

R. Gear, Esq., 19, Oxford Square, Hyde Park;
C. S. Gregson, Esq., Liverpool;
B. B. Labrey, Esq., Manchester;
T. H. Allis, Esq., York;
E. Brown, Esq., Burton-on-Trent;
R. F. Logan, Esq., Duddingstone;
G. Ransome, Esq., F. L. S., F. Z. S., Ipswich;
were elected subscribers; and

Herr Zeller of Glogau was elected an Honorary Member in the room of C. J. Schönherr, deceased.

Memoirs, Exhibitions, &c.

Mr. S. Stevens exhibited the section of a stem of a thistle, showing the pupæ of *Oncocera Cardui* embedded in the pith on which the larvæ feed.

Mr. Stainton exhibited, on behalf of Mr. T. H. Allis, a box containing many specimens of *Microlepidoptera* from the collection of Haworth. These specimens had enabled him to correct some errors and to clear up many doubts in regard to some of Haworth's species.

Mr. J. W. Douglas exhibited some larvæ of a species of *Porrectaria* on the leaves of *Ballota nigra*, the parenchyma of which they eat, leaving the cuticle, thus giving the foliage a blotched appearance. These larvæ inhabit cases of a black colour formed by them from portions of the leaves, enlarging them from time to time as their growth requires it.

Mr. Douglas stated that in the place where he had found these larvæ he had last year found *Porrectaria lineola*, Steph., in profusion, and he supposed that these might be the larvæ of that species.

He also exhibited a specimen of *Aphelosetia rufocincrea*, Steph., reared from a pupa which he had found last March in a web on the stem of the common dock at New Brighton. He considered this fact interesting, as giving a clue to the history of a species about whose habits nothing was known, and which, though common in England, seemed unknown on the Continent.

Mr. Hogg exhibited a portion of a very large nest of the com-

mon wasp, *Vespa vulgaris*, found in the roof of his house at Norton, Durham. From its enormous size Mr. Hogg was induced to think that it must have been the work of more than one season.

Mr. Dallas read a paper, accompanied by a figure, on a new Hemipterous genus, for which he proposed the name of *Urochela*.

Mr. J. W. Douglas read a continuation paper on the genus *Gelechia* of Zeller.

Mr. Westwood called the attention of the Society to the descriptions and notices which he had published in his Introduction and in the Journal of the Proceedings of this Society for July, 1847, of a minute but singular Hymenopterous insect, parasitic in the nests of mason bees and wasps, to which he had applied the name of *Melittobia Audouinii*, having at the same meeting exhibited specimens of the insect and drawings of the structural details. The facts and characters given in these notices were sufficient, he said, to identify the insect and to distinguish it from every known species of the family to which it belongs. Notwithstanding this Mr. Newport, who was present at that meeting, had recently read a memoir on the same insect before the Linnæan Society, and had given it the name of *Anthophorabia retusa*, the description of which, however, communicated by Mr. Newport to and published in the Gardener's Chronicle of the 24th of March last, was perfectly unintelligible, six out of nine of the characters being erroneous. The following Mr. Westwood considered to be the essential characters of the genus, which belongs to the *Chalcididæ*.

" Antennæ maris 9-articulatæ, articulo 1mo maximo, subtus ad apicem excavato; articulis 4to, 5to, et 6to minimis: fœminæ simplices 8 articulatæ, articulis, in utroque sexu, apicalibus clavam ovalem formantibus. Mas omnino cæcus. Fœmina oculis ocellisque instructa. Alæ maris abbreviatæ, fœminæ magnitudinis ordinariæ, alæ vena ordinaria *Eulophorum* typicorum instructa. Tarsi 4-articulati.

" Habitat parasitica in nidis apum cæmentoriarum."

Mr. Westwood added, that in the report of the proceedings of the Linnæan Society of May 1st (in the Gardener's Chronicle of the 6th instant), Mr. Newport was made to state that he (Mr. Westwood) had mistaken the antennæ of the larvæ of the *Ichneumonidæ* for ocelli, the fact being that although De Geer had described these dark points as eyes, Mr. Westwood having in view the structure of the head in the larvæ of the saw flies, which have both eyes and ocelli, and of the aculeate *Hymenoptera* having neither, had expressly guarded himself from determining their nature, and had simply said that they resembled eyes.

4th June, 1849.

G. R. Waterhouse, Esq., President, in the Chair.

Donations.

The Transactions of the Zoological Society, Vol. 3, part 6; and the Proceedings of that Society to December, 1848. By the Zoological Society.

The following gentlemen were balloted for and elected:—
Francis Swanzy, Esq., of Dix Cove, as Corresponding Member;
Joseph William Dunning, Esq., as Member; and
W. Michael, Esq., as Subscriber.

Exhibitions, Memoirs, &c.

A letter from Mr. Westwood to the President was read, stating that after an attendance of five days at the Police Court, and four days at the Old Bailey, he had succeeded in recovering the drawings and coloured patterns of plates stolen from the Society's rooms, and now restored them to the Society. The thief, he added, had been transported for fourteen years. A unanimous vote of thanks was passed to Mr. Westwood for the trouble he had taken in this matter.

Mr. Westwood brought for distribution specimens of *Ilythia sociella*, which he had reared from the pupæ. He exhibited a mass of cocoons of this species which had fallen out of a tree, and remarked that these coverings were double, each one having a lining, and that they were open at one end.

Mr. Westwood also exhibited specimens of *Ptinus hololeucus*, received from Mr. Hart of Knightsbridge, who found them in open jars attached to his galvanic battery, in which a strong solution of silica was operated on by a galvanic current for a lengthened period, and Mr. Hart thought that their presence was due to galvanic agency. Several members stated that they had seen these beetles in houses in London, and there did not appear to be any ground for Mr. Hart's opinion. Mr. Westwood stated that *Acarus Crossei*, whose appearance had been believed to be due to galvanism, had been produced without galvanic power, as recorded in the Gardener's Chronicle long since.

Mr. Weir exhibited a collection of *Lepidoptera*, taken within the previous month near Tunbridge Wells, including some rare *Tineæ*; also a *Lobophora polycommata*, found near Lewes on the 4th of May.

Mr. Moore exhibited some eggs found on the feathers of birds in the aviaries at Knowsley. They appeared to belong to some unknown parasite on birds.

Mr. S. Stevens exhibited a fine bred specimen of *Hypena crassalis;* the larva had fed on *Vaccinium Myrtillus.*

Mr. Douglas exhibited specimens of *Coccyx Strobilana*, L., and read a note of their habits as follows:—

"Early in May last year Messrs. Shepherd and Waring took this species for the first time in this country in a fir plantation a mile and a half beyond Croydon. I made several expeditions to the place in the hope of getting it, but without success, until on the 19th of May last year I saw it flying in plenty round the tops of the spruce-firs in the hot sunshine, between the hours of ten and one, and not afterwards; but I could only capture one occasionally, as it descended within reach. Later in the day I beat the trees all round without obtaining one, hence I conclude that it remains and breeds in the higher branches. Mr. H. Doubleday considers, and I think correctly, that this species is the true *Tinea Strobilella* of Linné. *Tortrix Strobilana* of Haworth is the same as *Pscudotomia fraternana* of Stephens, and the *Coccyx splendidulana* of Guénée. It resembles the present species, but is smaller, has not so many metallic markings, and is found on oaks."

Mr. Douglas also exhibited a specimen of *Retinia Turionana* (*Tinea Turionella*, L.), a species very rare in this country, taken by him from a Scotch fir at Wickham wood on the 27th of May. He also showed a specimen of *Micropteryx Allionella*, Fab. (*Tinea Ammanella*, Hüb.), a species that appeared to be more common in the north than in the south of England.

Mr. Shepherd exhibited a remarkable variety of *Arctia villica*, and specimens of *Coccyx Strobilana*, which he had reared from cones of spruce fir, one of which he showed. The larvæ had fed in the centre, changed to pupæ about two inches from the apex, and when ready to emerge in the perfect state these had worked their way to the exterior along the tube they had previously formed. Mr. Stephens said the larvæ, pupæ, and cone were figured in Ledermüller's "Mikroskopischke Gemuths und Augen Ergobung," vol. ii. tab. lxiv., published in 1762.

Mr. Westwood read descriptions of two new exotic *Coleoptera.*

The Secretary read a paper by Mr. Th. Desvignes on *Macrus* and *Coleocentrus*,—two of Gravenhorst's subgenera of *Ichneumons;* and exhibited two specimens taken by Mr. Th. Desvignes at Vienna.

Mr. Waterhouse submitted to the meeting his descriptions of

two insects which had been placed in his hands for examination by Mr. Spence. These insects were sent to Mr. Spence by Dr. Davy, from the island of Barbados, where, according to the gentleman last mentioned, they do considerable mischief,—the one (to which the name of *Tricorynus Zeæ* is here applied) attacking the grain of the common maize; the other (*Cryptorhynchus Batatæ*) attacking the tubers of the sweet potatoe. The small, white, hairy larva of the former insect lives in the grain of the maize, precisely similar to a *Bruchus* larva, a habit in which the *Tricorynus Zeæ* differs much from its allies, the species of *Dorcatoma* and *Anobium*.

Genus Tricorynus.

Antennæ ten-jointed; basal joint large (as long as the six following joints taken together), and dilated at the apex; second joint short, obconic; third, and four following joints, small, and nearly cylindrical; the third is about equal in length and breadth, the others transverse; three terminal joints large, and much dilated, on the inner side, the last joint elongated, rounded at the apex, and gradually contracted in width towards the opposite extremity; the two preceding joints nearly triangular. *Palpi* short, with the terminal joint somewhat dilated at the extremity, and truncated. *Legs* and tarsi simple; the tarsi small, short, 5-jointed; the basal joint the largest, the remaining joints successively smaller; claws minute. *Head* large, bent downwards; eyes nearly round, being but indistinctly emarginated in front. *Thorax* transverse, trisinuated behind; posterior angles rounded; the anterior subacute.

Tricorynus Zeæ.

Brown, or pitchy black, imperfectly covered with an exceedingly fine ashy pubescence; antennæ and legs pitchy red; thorax transverse, posteriorly equal to the elytra in width, anteriorly much contracted; elytra rather longer than broad; the basal half with the sides parallel, the apical portion rounded; two or three faint striæ are observable near the lateral margin of each elytron, beyond this there is no sculpturing.

Length $1\frac{3}{4}$ to 2 lines.

This insect greatly resembles certain species of *Dorcatoma* in most of its characters, but differs in having ten, instead of nine, joints to the antennæ; it is rather larger than the *Ochina ptinoides*, and is proportionately broader, and not quite so convex.

M. Chevrolat, to whom I exhibited this insect, said he thought it was identical with Dejean's *Dorcatoma Muserum*.

Cryptorhynchus Batatæ.

Cr. oblongo-ovatus, nigro-piceus, squamosus, supra spinulis erectis nigris et pallidis obsitus; *rostro* brevi, crasso, arcuato, ruguloso-punctato, carinato; *thorace* rugoso-punctato, setis (plerumque nigris) obsito, postice squamulis flavidis marginato, dorso linea, punctisque parvulis, albis, notato; *elytris* ocellato-punctato-striatis, interstitiis fere planis, fusco, nigro, alboque variegatis, plaga communi, transversa, sordidè alba, subapicali, ornatis; *femoribus* indistinctè dentatis; *scutello* minutissimo.

Long. corp. 2 lin.

Hab. Barbados.

This is a minute species of *Cryptorhynchus*, and differs somewhat from the type of the genus—if we regard the *Cr. Lapathi* as such—though not sufficiently, as it appears to me, to require removal from that section. Its form is more elongated, and its scutellum is so minute as to require the aid of a strong lens to detect it; the insect nevertheless has well developed wings: the rostrum is stouter, and subdepressed, and is inserted in a very deep rostral groove, which terminates between the coxæ of the anterior pair of legs; the scape of the antennæ is shorter and stouter, the basal joint of the funiculus is also stouter, the second joint is of an elongate obconic form, the remaining joints are also obconic, but very short; the club is tolerably developed, and of a short ovate form; the femora are rather less stout, and very indistinctly toothed beneath.

The head is covered chiefly with pale scales, but has two black spots; the thorax is rather broader than long, rather suddenly contracted in width from the middle to the fore part, and with the lateral margins of the hinder half nearly parallel, being very slightly rounded; the upper surface is densely beset with short, stiff, erect bristles, which are most of them black, but some few are white, and are aggregated in parts so as to form small spots and a white mesial line; the hinder margin is clothed with orange-yellow scales, and these form a small spot near the scutellum. The elytra are more than three times the length of the thorax, and about half as wide again, the humeral angle is rounded, the sides nearly parallel, except towards the apex, where they are rather suddenly contracted, and obtusely rounded: they are covered with scales, some of which are dirty white, others brown, and others black, producing a variegated appearance; in each of the tolerably large punctures of the striæ is a white scale: on the fourth interstice from the suture is a small white spot, which is rather more conspicuous than

others; it is situated above the middle of the elytron, and at a short distance from the apex of the elytra is a conspicuous transverse dirty white patch, in which is a waved black line. Besides the scales there are scattered dark and pale hairs on the elytra. On the under parts of the insect are scattered pale scales. The limbs are clothed with setiform scales, most of which are pale.

Mr. Bond said, that he wished to put collectors on their guard, as a dealer was selling pupæ of *Deilephila Galii* as British, which there was good reason to believe had been imported from the continent.

July 2, 1849.

G. R. Waterhouse, Esq., President, in the Chair.

Donations.

On the Animals still found in a living State in the Stomachs of Oysters. By the Rev. J. B. Reade. Presented by the Author.

Observations on the Application of Electricity, Galvanism and Electro-Magnetism, as Auxiliaries to Medicine and Surgery; and

On the Closure or Obstruction of the Eustachian Tube. Both presented by the Author, Mr. Wright.

Five of the publications of the Société de Physique et des Sciences Naturelles, of Lyons. Presented by that Society.

A large collection of Java insects, from Mrs. Hofland, of Java. Presented through Wm. Spence, Esq.

The thanks of the Society were given to the respective donors.

James B. Ellman, of Rye,
R. A. Ogilvie, of London,
James Bladon, of Pont-y-Pool, and
G. M. Salt, of Shrewsbury, Esqrs.,
were balloted for and elected Subscribers.

Exhibitions, Memoirs, &c.

Mr. Weir exhibited specimens of *Gelechia Lappella*, bred from burdock heads; *Antithesia Capreana*, reared from sallow leaves; and *Sericoris signatana*, which appeared in a cage containing leaves from several plants. Mr. Douglas observed, that the breeding of *G. Lappella* was particularly interesting, inasmuch as a doubt had arisen whether this species—which was identical with *Recurvaria*

silacea of Haworth and the *Cleodora silacella* of Stephens — was the same as *R. silacea*, var. *β*. of Haworth (*Cleodora falciformis* of Stephens, *G. paucipunctella* of Zeller); and as Mr. Weir had reared but this one species from burdock heads, and the observations of continental Entomologists, as communicated by Herr Zeller, went to prove that *Lappella* and *paucipunctella* were distinct species, the opinion of Mr. Stainton that they were not different was erroneous. Mr. Stainton said he was convinced, and withdrew what he himself had called his "bold assertion."

Mr. Wing exhibited specimens of *Depressaria conterminella*, bred from osier leaves.

Mr. W. Michael exhibited a fine *Deilephila Euphorbiæ* taken at Caen Wood on the 22nd June.

Mr. S. Stevens exhibited several species of *Lepidoptera* taken about St. Osyth, in Essex, including an apparently new *Lozotœnia;* also several species found on the coast beyond Southend, including *Gelechia pictella* and a new *Psyche*,—the same as found in the Isle of Sheppy by Mr. Ingall, and which Mr. Newman had proposed to call *retiella*.

Mr. Stainton exhibited a species of *Tineidæ* new to Britain, (*Nepticula argyropeza* of Zeller,) taken near Sheffield, and an *Aechmia* from West Wickham wood. He also exhibited, from the collection of Mr. Allis, *Argyresthia Sorbiella*, taken on mountain ash, and a new *Tinea* allied to *masculella*.

Mr. Bond exhibited some Coleopterous larvæ which had caused great destruction among the tares, at Newton, in Cambridgeshire. He also said a specimen of *Nascia cilialis* had been found in the same locality,—a species which had remained unique since first taken by the Rev. G. Blunt, many years since.

Mr. Westwood exhibited four species of *Paussidæ* from Port Natal; also an *Elater* from Italy, brought thence by Mr. Fortnum, who had remarked quantities of males attracted to and flying round a female, after the manner of *Bombyces*.

The President had once observed several males of *Ptenicerus sanguinicollis*, fully developed, under the bark of a tree, but not one female was visible, until he found some deep in the wood, and which, although mature, not having emerged into activity, the males appeared to be waiting for.

Mr. Westwood exhibited a piece of pound-cake infested to the centre with *Myrmica domestica*, and it was remarkable that at this season, when swarms of winged females appeared, all those herein were apterous.

Mr. Westwood also exhibited a box containing a collection of

anglers' flies, arranged according to the times of their appearance. It was interesting to find that the "gray drake" and "green drake" were but sexes of one species, and to be able to identify the species of the "stone flies."

Mr. Westwood showed some flies and their eggs, part of a cluster of sixty or seventy found in a tuft of hawthorn, about twelve miles from Derby, and sent to him by Mr. Spencer, who had remarked that each fly seemed to remain as a protector over the eggs it had deposited. They were identified as *Atheryx Ibis*.

A letter to Mr. Westwood, from Colonel Hearsey, now in India, was read, detailing, among other interesting matters, some entomological observations that his constant occupation with military duties had not hindered him from making.

The following observations on the influence of slight changes of temperature on butterflies, by John Davy, Esq., M.D., F.R.S., &c., in a letter addressed to W. Spence, Esq., were read:—

"Lesketh How, Ambleside,
June 16th, 1849.

"My dear Sir,—It was from you I learnt that no exact thermometrical observations had yet been published on the degrees of temperature at which hybernating insects, or those having properties analogous, pass from a torpid to an active state, and consequently, that a record of any such observations, made with exactness, would not be devoid of interest.

"The observations which I have hitherto made on this subject have been chiefly confined to two species of butterfly, viz. *Vanessa Urticæ* and *Io*. These I shall briefly relate.

"The first-named butterfly I found active within doors in a window on the 18th of last March, when the weather was unsually mild for the season. It was in untarnished beauty, as if fresh from its puparium. It was placed in a thin glass vessel, and lightly covered with paper, so as to prevent its flight, and yet allow of a sufficient access of air. Thus confined, it was put into a dark cupboard, the temperature of which, even when there was a fire in the room, was below 60° Fahrenheit. It remained alive about a month, and during that time it was observed almost daily, and occasionally oftener,—two or three times in the same day, and its place changed. The following are the only notes that were taken down, showing the effects of changes of temperature, in rendering it active from being torpid, and *vice versâ*.

"April 11th.—Since first taken it has been found torpid at 58°, as if dead, showing no indications of life even when shaken; at 64°, or thereabouts, it has become active, and that even when

brought from darkness into an obscure light,—the mere degree of light, apart from heat, seeming to have little effect: replaced where the temperature was about 58°, and observed an hour or two afterwards, it was found to have resumed its torpid state.

"April 14.—Found it standing, risen from having been recumbent on its side, but not active; temperature of the dark cupboard then 59°.

"April 18.—At 60° it was torpid: it seemed indeed dead, and showed no signs of life till the temperature was raised to about 75° by placing it on a stove; after a few minutes at this temperature it exhibited marks of languid life, by a tremulous motion and partial opening of its wings. Two days later it was found dead.

"Another butterfly of the same kind was found active on the 28th of April, at a temperature of 62°. It became torpid at 56°.

"May 1st.—It was found torpid at 58°; it became active at 63°. On the following day it was not roused by a temperature of 95°; it was dead.

"A *Vanessa Io* was found torpid on a garden walk, when the temperature on the 29th of April (the morning of the day on which it was found) must have been below 40°; was placed under the same circumstances for observation.

"On the 2nd of May it was torpid at 59°: after ten minutes at 66° it became active.

"May 4th.—Torpid at 62° in the dark; after a few minutes' exposure to a temperature of 67° in light it became active.

"May 11th.—Torpid at 57°; slightly active at 63°; became again torpid by a reduction of temperature to about 60°.

"May 13th.—Torpid at 57°; on exposure to a dull light at 61° it rose on its feet, before recumbent on its side, showing when thus standing only slight marks of vitality; yet in a few minutes, after gently touching its antennæ, and breathing on it, it became pretty active.

"May 15th.—Torpid at 58° in the dark; became active in a few minutes at 62° in a dull light, the sky being overcast. Two days after it was found dead at a temperature of 59°, its wings expanded, seeming to denote that it had not died in a torpid state.

"In describing the above observations I have used the word torpid rather than a state of sleep, from the belief that the butterflies, the subjects of them, were, when motionless, not under the influence of sleep, but of that kind of torpor to which certain animals are subject in their hybernating condition,—one in which the vital functions are all but suspended, and in consequence the

corporeal waste is very small,—permitting retention of life without the use of food,—the object, no doubt, for which the hybernating faculty is by nature intended. All that came under my notice in the instances of these butterflies seemed to accord with this view, such as the rapid transition from activity of organs to rest, and that so perfect, as to simulate death on reduction of a few degrees of temperature; and the length of time life was sustained without the support of food, that is, compared with the time insects of the same family live at a high and uniform temperature in a state not of torpor, when confined and deprived of food: thus, in Barbados, butterflies so confined I have commonly found dead in two or three days.

"It is my intention, if leisure and opportunities permit, to prosecute the subject further, and to make some experiments on the effects of gasses not capable of supporting life on such insects which seem to have the power of hybernating. Should the results be at all decisive, I shall have pleasure in communicating them to you, to dispose of like the present, as you may think best.

"I am, my dear Sir,
Yours very truly,
J. Davy."

6th August, 1849.

J. F. Stephens, Esq., F.L.S., Vice-President in the Chair.

Donations.

A quantity of interesting insects of India, collected and presented by Captain Hutton.

A specimen of *Sirex gigas*, found boring in wood. Presented by Mr. Lamb, Hurstbourne Park, Whitchurch, Hants.

Six specimens of *Lixus angustatus*, from Hastings, and *Harpalus tardus?* from near Northampton. Presented by the Rev. Hamlet Clark.

A Memoir on the Circulation in the Larvæ of Insects, by M. Verloren, Docteur-en-Sciences, Utrecht. Presented by the Author.

Transactions of the Tyneside Naturalists' Field-Club, vol. i. part 3. Presented by the Club.

Nya Svenska Homoptera beskrifna, af Carl H. Boheman. Presented by the Author.

Entomologische Zeitung, February to June. Presented by the Entomological Society of Stettin.

The Zoologist, January to June. Presented by Edward Newman, Esq.

Nine portraits of living naturalists. Presented by G. Ransome, Esq., Ipswich.

Journal of the Royal Agricultural Society, vol. x. part 1. Presented by that Society.

The thanks of the Society were returned for these presents to the respective Donors.

F. Barlow, Esq., of Cambridge, was elected a Subscriber.

Exhibitions, Memoirs, &c.

Mr. Bond exhibited *Chilo gigantellus*, W. V. (*punctigerellus*, Steph.), *Chilo mucronellus*, *Nascia cilialis*, *Zeuzera Arundinis*, male, *Harpalyce sagittata*, and an unknown *Eupithecia*, all taken in the fens of Huntingdonshire and Cambridgeshire.

Mr. Shepherd exhibited some rare *Lepidoptera* from Yaxley, including *Zeuzera Arundinis*, female, *Recurvaria falciformis* of Haworth, *Tinea Monachella*, and several new or rare species of *Micro-Lepidoptera*; also *Lithosia pygmæola*, taken at Deal.

Mr. Samuel Stevens exhibited several interesting *Tortrices* and *Tineæ*, taken near London, or bred from larvæ; the latter mostly found on sallows at Wimbledon Common.

Mr. Smith exhibited a collection of *Hymenoptera*, taken near London, including *Allantus dispar*, *Melecta Atropos*, all the four British species of *Saropodæ*, and *Miscophus bicolor*, male; also five specimens of *Osmia pilicornis*—the new species described by Mr. Smith—from Birch Wood.

Mr. Westwood exhibited the larvæ of a *Proctotrupes*, found parasitic in the larva of a *Harpalus*.

Mr. Douglas exhibited a collection of *Lepidoptera* he had taken near Weymouth, in July, including *Pamphila Actæon* from the Burning Cliff, *Margaritia longipedalis*, *Gelechia obsoletella*, F. v. R., and *Homæosoma nimbella?* near Sandsfoot Castle; also *Margaritia asinalis*, *M. flavalis*, *M. ochrealis*, *Emmelesia rusticata*, *Ptychopoda degeneraria* (two), *Pempelia carnella*, *Gelechia cinerella*, and other rarities from the Isle of Portland.

Mr. Westwood exhibited some interesting insects received from M. Reich, including several rarities from New Holland, and three new *Paussidæ* from Africa.

Mr. S. Saunders exhibited insects from Greece and Albania, including a new genus of *Strepsiptera* parasitic upon a species of *Hylæus*, being the first instance known of this genus of bees being so affected. Mr. Saunders stated that he kept a specimen of *Parmena fasciata* alive for two months without food.

Mr. S. Stevens exhibited *Hectera Esmeralda*, which he had received from Mr. Wallace, now at Para.

A paper on two new exotic *Hymenoptera*, with figures of the insects, by Mr. Smith, was read.

Notes by Captain Hutton, on some of the insects sent by him to the Society, were read.

Mr. Westwood mentioned that the Rev. F. W. Hope had presented his library and collections to the University of Oxford, in aid of the movement now making by the University to encourage the study of the natural sciences.

3rd September, 1849.

G. R. Waterhouse, Esq., President, in the Chair.

Donations.

Entomologische Zeitung, for July; by the Entomological Society of Stettin.

The Zoologist, July to September. By Edward Newman, Esq.

Reports of the Smithsonian Institution, to January, 1849, and vol. i. of the Smithsonian Contributions to Knowledge. By the Smithsonian Institution.

Reports of the Council and Auditors of the Zoological Society. By that Society.

Six specimens of *Peronea permutana*. By C. S. Gregson, Esq., by whom they were captured at New Brighton, Cheshire.

The thanks of the Society were given to the respective Donors.

Henry Ingall, Esq., Glengall Grove, Old Kent Road, was elected a Subscriber.

Exhibitions, Memoirs, &c.

Mr. S. Stevens exhibited some rare insects taken at Dover and Deal, including *Gelechia Neuropterella*, *Lixus bicolor* (alive) from

the sand-hills, and *Choragus Sheppardi* from dead wood in hedges; also *Sitaris humeralis*, found on the wall of his own garden at Hammersmith.

Mr. F. Smith exhibited some cells apparently formed of clay, made by *Geotrupes stercorarius*.

Mr. Westwood exhibited specimens of a species of *Aphis*, which he had described in the Gardener's Chronicle under the name of *Pemphigus Lactucæ*. It had recently destroyed whole beds of lettuces, in various parts of England, by feeding on the roots of the plants. He also exhibited a living *Sirex Juvencus*, and noticed its bold attitude when disturbed, likewise the adaptation of its limbs for progressive motion in a cylindrical burrow. He also exhibited a piece of wood with several of the burrows formed by this species, a specimen of which just developed was seen in one of them; in another burrow was a living larva; specimens of *Sirex gigas* had been produced from the same piece of wood, which was forwarded by Mr. Lamb from Hampshire. He also exhibited specimens of *Scleroderma*, male, with drawings and dissections, from which and the observations of S. Saunders, Esq., by whom they were captured in Albania, it was proved that the insects, doubtfully described by Mr. Westwood in the second volume of the Entomological Society's Transactions as the males of *Scleroderma*, do not belong to that genus. He likewise showed specimens of the rare Australian *Paragia tricolor* (from his own collection), described by Mr. Smith at the August meeting, upon the relation of which to the aberrant *Vespidæ* he made some observations. Also specimens, with drawings and dissections, of two species of a new Australian genus of bees allied to *Colletes* and *Hylæus* (from his own collection), one species of which Mr. F. Smith stated was in the collection of the British Museum, from which collection he had described it. Also a larva of one of the larger *Harpalidæ*, which had been destroyed by the larvæ of a parasitic *Proctotrupes*, about thirty of which had burst out of its body in various parts, and had then become naked pupæ, attached by the extremity of their bodies to their dead victim.

Mr. Shepherd exhibited a living larva of *Anesychia dodecea*, from Darenth Wood; also *Crambus aridellus*, female, *Oncocera lotella*, *Depressaria nanatella*, and other rare *Lepidoptera*, from Deal.

Mr. Stainton read a paper "On the Laws regulating Entomological Nomenclature," of which the following is an extract:—

"In nomenclature it is of the greatest importance that entomologists be unanimous, for if each one choose to call one insect by

a different name, and persist in so calling it, what an endless confusion must arise!

"Let us examine a little what are the fundamental laws of entomological nomenclature.

"1. The name first given to an insect by printed publication is always that which is to be retained.

"As a general law this is not denied; indeed it is the fundamental rule in all branches of Natural History; but there are certain exceptions raised to this rule by some Lepidopterologists.

"1st. That a name, if erroneously given or ungrammatically constructed, may be amended or changed.

"2nd. That no two species of the same main group should bear the same specific name.

"3rd. That the name of a *Geometra* must end in *aria*, of a *Pyralis* in *alis*, of a *Tortrix* in *ana*, of a *Tinea* in *ella*.

"We will examine these three exceptions *seriatim*.

"1st. *A name, if erroneously given or ungrammatically constructed, may be amended or changed.*

"Thus, as the Linnæan *Tinea Padella* does not feed on *Prunus padus*, and another allied species does feed on it, two eminent German Lepidopterologists have conceived themselves at liberty to change its name, and while one calls it *agnatella*, the other calls it *variabilis*. Herein both are manifestly wrong; and I believe all Entomologists will agree with me, that to change a name because it is incorrect,—whether, as in this instance, from its implying a habit which the insect does not possess,—whether from its not possessing some peculiar termination,—or whether from its being erroneously or ungrammatically constructed,—is to enter an interminable waste of complexity; for how are persons to be persuaded to agree as to what constitutes an incorrectness? The meaning or formation of a name is of incomparably less importance than the acceptance of the name itself, the change of a name being a greater evil than the currency of one erroneously or ungrammatically constructed.

"2nd. *No two species in the same main group should bear the same specific name.*

"I ask why? and am told it creates confusion. Are, then, Lepidopterists so much more subject to be confused by repetition of names than students in other branches of Natural History? In Botany have we not, for instance, an *alpina* in numberless genera? and is it not simpler for the memory to retain this name than if we had a different specific name in each genus, intended to designate an alpine habitat for the plant? And turning to insects, how

often in *Coleoptera* do *brevipes*, *rufipes*, &c., occur in the same main groups!

"Yet it creates confusion to have a *Peronea rufana* and a *Carpocapsa rufana*, and the latter must change its name and become *Westwoodiana!* How do we know it will retain that name? Perchance, before the publication of that name, a Lepidopterist in New York, Sydney, Calcutta or Kamschatka, has described an *Eupœcilia* by the name of *Westwoodiana;* a new name is then selected for the unfortunate *Carpocapsa*, which might perhaps again have to undergo the same fate; in short, the poor insect seems likely never to attain that essential requisite, a fixed name, —when lo! a fortunate chance enables a Swedish student to recognize as a Linnæan species the *Peronea rufana*, W. V. Of course this *rufana* is now dropped for the older name, and the unfortunate *Carpocapsa* is allowed quietly to regain its cast-off clothing.

"I now ask which creates most confusion?

"But why should there be more confusion between *Peronea rufana* and *Carpocapsa rufana* than between *Pieris Cratægi* and *Trichiura Cratægi*, or between *Theela Quercûs*, *Smerinthus Quercûs* and *Lasiocampa Quercûs?* I am told that the limits of our genera are so uncertain that *Peronea rufana* and *Carpocapsa rufana* might be placed in the same genus. Well! when that does happen it will be time enough to change one of them; to change it on the mere contingency is making present confusion to prevent some future confusion, which may perhaps never come to pass.

"3rd. *The name of a Geometra must end in* aria, *of a Pyralis in* alis, *of a Tortrix in* ana, *of a Tinea in* ella.

"Well! this is creeping into a corner with a vengeance: we begin with a rule general to all branches of Natural History; to this one objection is raised, applying only to one order of insects; and here we have another objection, actually applying to only a portion of that one order. Truly this absurdity has no limits!

"Now I confess myself at a loss how to argue this last point, for I have in vain applied for a reason for this objection, and the only reply that I have ever yet been able to get is, that it is convenient by the termination to know at once to what group an insect belongs: then why not apply it to the other groups? Moreover, if *alis* implies a *Pyralis*, what is *Bombycia viminalis?* If *anus*, *ana*, implies a *Tortrix*, what are *Pamphila sylvanus*, *Nudaria mundana* and *Lithosia complana?* If *ellus*, *ella*, implies a *Tinea*, what are *Deilephila porcellus*, *Deiopeia pulchella*, *Cybosia mesomella* and *Setina irrorella?*

"I should have imagined that the advocates of this system of uniformity might have quoted the example of Linnæus; but he had two terminations for the *Geometræ*,—*aria* and *ata*,—and as the objectors of the present day have thought fit to change all his *ata*'s into *aria*'s, not even being aroused from the folly of their theory by the fact of *Prunata* of Linnæus becoming thereby a dropped name, there being already a *Prunaria*, they cannot quote his example as any argument on their side; and it does not appear that Linnæus laid down any rules on this subject; he merely gave to his *Geometræ* with pectinated antennæ the termination *aria*,—to those with simple antennæ the termination *ata*,—to the *Pyrales* the termination *alis*,—to the *Tortrices* the termination *ana*,—and to the *Tineæ* the termination *ella;* but that he intended these rules to be so rigid that an insect named as a *Tinea* should, on being found to be a *Tortrix*, change its termination, we are surely not warranted to believe. Why should not *Pomonella* and *Turionella* retain the names that Linnæus gave them? Moreover, if *Turionella* becomes—as a *Tortrix*—Turion*ana*, what becomes of its parasite, *Ichneumon* Turion*ellæ?* Besides the last innovation, the change of the *ata*'s into *aria*'s has been of such recent occurrence, that if tamely submitted to as an inevitable infliction, it will probably tempt some future writer to give uniform terminations to the *Noctuæ* or other groups of the *Lepidoptera*.

"The second fundamental law of Entomological nomenclature is—

"II. No two species in the same genus should bear the same specific name.

"I am told this is a truism, and needs no argument; but unless it is adopted, and the first primary law only is considered, we should be obliged to restore to (*Depressaria*) *Hypericella*, Hbn., the older name of *Liturella*, Hbn., there being already a *Liturella*, W. V., in the genus *Depressaria:* in fact, this law is the only admissible exception to the first law.

"Since writing the above, my attention has been called to a 'Report on the Laws of Zoological Nomenclature,' published in the "Proceedings of the British Association,' in 1842, and I find that the following rules were there laid down.

"1. The name originally given by the founder of a group or the describer of a species should be permanently retained, to the exclusion of all subsequent synonyms (with the exceptions about to be noticed).

"2. The binomial nomenclature having originated with Linnæus,

the law of priority in respect to nomenclature is not to extend to the writings of antecedent authors.

" 10. A name should be changed which has before been proposed for some other genus in Zoology or Botany, or for some other species in the same genus, when still retained for such genus or species.

" 11. A name may be changed when it implies a false proposition which is likely to propagate important errors.

" 12. A name which has never been clearly defined in some published work should be changed for the earliest name by which the object shall have been so defined.

" 13. A new specific name must be given to a species when its old name has been adopted for a genus which includes that species.

" 14. In writing Zoological names, the rules of Latin orthography must be adhered to.

" Of these rules, the first two will be unhesitatingly assented to as axioms. Rules 3 to 9 inclusive are applicable to genera only, not to species, and thus do not come within the limits of my present inquiry. Rule 10 is identical with my second law, 'that no two species in the same genus should bear the same specific name.' Rule 11 is the first from which I dissent, 'a name may be changed when it implies a false proposition which is likely to propagate important errors.' This, we are told, 'is a concession to human infirmity,' but I beg leave to decline this concession. The report adds, 'Instances of this kind are indeed very rare, and in some cases, such as that of *Monodon*, *Caprimulgus*, *Paradisea apoda* and *Monoculus*, they have acquired sufficient currency no longer to cause errors, and are therefore retained without change. But when we find a Batrachian reptile named, in violation of its true affinities, *Mastodon saurus*, a Mexican species termed (through erroneous information of its habitat) *Picus cafer*, or an olive-coloured one *Muscicapa atra*,—or when a name is derived from an accidental monstrosity, as in *Picus semirostris* of Linnæus and *Helix disjuncta* of Turton, we feel justified in cancelling these names, and adopting that synonym which stands next in point of date.' And again, 'At the same time we think it right to remark that this privilege is very liable to abuse, and ought therefore to be applied only to extreme cases, and with great caution. With these limitations we may concede that a name may be changed when it implies a false proposition which is likely to propagate important errors.' In the first place, there is here no positive rule laid down; and unless a rule is fixed and definite, of what use is

it? In the second place, who is to decide when a name is or is not likely to propagate important errors? A very large proportion of insects are named after plants on which they do not feed: but as a name is not meant to be a description, why change it because if viewed as a description it is found incorrect. Rule 12, which throws down manuscript names, or names published in a Catalogue (without any description), is a regulation quite in accordance with my own views. Rule 13 having been generally adopted in past cases, and being not likely to be called into use in future, may safely be conceded: thus, instead of *Cossus cossus*, L., we say *Cossus Ligniperda*, F. Rule 14, 'In writing Zoological names the rules of Latin orthography must be adhered to.' This is a very good rule for authors to observe, but of doubtful applicability to the past, especially when we find it recommended that 'when a name has been erroneously written, and its orthography afterwards amended, we conceive that the authority of the original author should still be retained for the name, and not that of the person who makes the correction.' Are we then to say *Sulzeriella* of Linnæus, *Christiernini* of Linnæus, *Tapetiella* of Linnæus, such names not occurring in Linnæus at all? instead of *Sulzella*, *Christiernana*, *Tapezella*: surely this would be making confusion, not lessening it.

"I cannot conclude this paper without a few words in reply to the facetious remarks of the Editor of the 'Zoologist,' (Zool. 2549). He states that the novelties in the laws to which his remarks refer will not be attended to: now I utterly deny that they contain any novelties. Let us see if we can find one. Is it in Law No. 1, that 'the name first given to an insect by printed publication is always that which is to be retained'? Surely this is no novelty; for I observe in the 'Zoologist,' (Zool. 2136), the words, 'I cannot pronounce too emphatically that priority is the only law I can ever consent to acknowledge in the nomenclature of species,' and they are followed by the signature, 'Edward Newman.' Is the novelty in Law No. 2, that 'No two species in the same genus should bear the same specific name'? Having been told by so many parties that is an axiom and a truism, I cannot surely believe there is any novelty in it. Law No. 3 is no new law, but merely a deduction from Law No. 1; and any one fully granting Law No. 1 cannot dispute this law. The writer further adds, that in these laws 'there are good points, but none of these have the charm of novelty, neither do they require re-enactment.' It must surely have escaped his notice, perhaps in the hurry of the moment, that an attempt is being made to supersede the law of priority in

certain groups of *Lepidoptera*, by a law (by many people considered a *novelty*) of uniform terminations: I and others, therefore, deemed it necessary to remind the authors of this crotchet of the law of priority, by proposing to re-enact it."

Mr. Westwood said he was opposed to the rigid adoption of uniform terminations of names, and he respected the law of priority of name generally, but he thought that a name might be changed with advantage if it gave a wrong idea of the food of an insect. Thus, he would substitute *Rosana* for *Quercana* if an insect so named were found to feed on the rose and not on the oak.

The President thought uniform terminations of names not important, and there was no rule laid down for them, but as their use in certain groups had become common it might be as well to continue the practice. He also thought that the rule of priority ought to be observed, but he would except cases of manifest orthographical error, and such names as would give a wrong idea of the geography of species.

Mr. Douglas thought that the adoption of uniform terminations to specific names in a portion of one order was unphilosophical and puerile. With reference to the objections of Messrs. Westwood and Waterhouse, that a name conveying a wrong idea of habit or country should be altered, he did not see much force in them, because the student of Natural History—the only person to whom such a thing could be deemed to be of importance—would always look farther than the name; and as every Entomologist might have an objection to raise if these were allowed, none whatever should be admitted, but the law of priority held inviolable.

Mr. Westwood stated, with reference to an inquiry in the "Zoologist" as to the best pins for *Micro-Lepidoptera*, that Senator Van Heyden used very fine silver wire, the chief advantage of which was its non-liability to corrosion.

A conversation then arose on the subject of setting *Micro-Lepidoptera* flat, in the course of which Mr. Westwood said the flat was preferable to the deflected method in other orders besides *Lepidoptera*, and that Mr. Shuckard had long since shown how much better the characters of the wings of *Hymenoptera* were exhibited if they were in a horizontal position.

1*st October*, 1849.

H. T. Stainton, Esq., in the Chair.

Donations.

The following donations were announced, and thanks ordered to be given to the respective Donors thereof.

Catalogue of the Calcutta Public Library.

Report of the Librarian of the same, for 1847 and 1848. Presented by the Curators of that library.

"The Athenæum," for May, June, July and August. Presented by the Editor.

Six specimens of *Agrophila sulphuralis*, from Brandon, Suffolk. Presented by Mr. Dunning.

The following gentlemen were elected Corresponding Members of the Society:

E. Goding, Esq., M.D., Barbadoes.

R. B. Walcott, Esq., M.D., Barbadoes.

Grant Thomas, Esq., Barbadoes.

Daniel Blair, Esq., Surgeon-General, British Guiana.

Captain —— Hamilton, Madras.

Exhibitions, Memoirs, &c.

Mr. Stainton exhibited a small species of *Tineidæ*, of remarkable structure, new to Britain, communicated by Mr. Henry Doubleday.

Mr. Westwood stated, that the species of *Aphides* found on the lettuce, recently described by him under the name of *Pemphigus Lactucæ*, had been previously noticed by Sir O. Mosley in the Gardener's Chronicle, and by the Rev. L. Jenyns in his Observations on Natural History.

A specimen of *Cosmopteryx pedella*, Linn. (*angustipennella*, Hübner,) a species of *Tineidæ* new to this country, was exhibited on the part of Mr. Dunning, from Brandon, Suffolk.

Messrs. Michael, G. Ingall and H. Ingall, having been previously elected Subscribers, signed the obligation-book of the Society, and were admitted by the Chairman.

Mr. Dallas read the continuation of a paper on the *Hemiptera* of Boutan, in the East Indies; and Mr. Westwood read a paper

containing descriptions of various new exotic *Diptera*, including a species of the remarkable genus *Achias*, from India.

November 5, 1849.

G. R. Waterhouse, Esq., President, in the Chair.

Donations.

The following donations were announced, and thanks ordered to be given to the respective Donors:

Ten portraits of modern naturalists. Presented by G. Ransome, Esq. of Ipswich.

Kaferfauna der Preuszischen Rheinlande, vol. i., 8vo. Presented by M. Bach, the author.

Insectes Coléoptères de la Sibérie Orientale nouveaux ou peu connus. Presented by M. le Comte Mannerheim, the author.

Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, tom. xii. partie 1re.

Observations Astronomiques faites dans 1847 et 1848, à l'Observatoire de Genève, Supp. 1 et 2. Presented by the Société de Physique et d'Histoire Naturelle de Genève.

Exhibitions, Memoirs, &c.

Mr. Bond exhibited bred specimens of *Chilo gigantellus* (male and female), two singular varieties of *Nonagria Typhæ*, and three new *Tineidæ*.

Mr. Ingpen exhibited some fossil wings of insects, chiefly *Phryganeidæ*, from the insect-limestone of Gloucestershire.

Mr. Stainton exhibited *Argyresthia Spiniella*, Zeller, and *A. amiantella*, Z.? observing that in the latter the palpi were much longer than in *Ocnerostoma Piniariella*, which in appearance it much resembled. The former of these species was taken by Mr. Stainton, at Torwood, in Stirlingshire; the latter by Mr. Dunning, at Brandon. He also exhibited a leaf of the sallow rolled up by the larva of *Gracillaria stigmatella*; leaves of *Hypericum pulchrum* rolled up by *Gracillaria auroguttella?*; pupæ of *Lithocolletis Schreberella* in leaves of elm, and of *L. Alnifoliella*, six in one leaf of alder: he observed, that as alders grow in wet places, the leaves would fall in many instances into water, and

the pupæ existing in them between the cuticles be destroyed, which would account for the comparative rarity of the perfect insect.

Mr. S. Stevens exhibited a living specimen of *Lamia textor*, found by Mr. Barton in an osier bed, near Bristol, and fed for two months on osier leaves.

Mr. W. W. Saunders exhibited some tobacco, imported in bales from South America, which had been fed upon by the larvæ of *Lasioderma testaceum*, Steph. He observed that only the thin portions of the leaf were eaten, and that the amount of damage done to the tobacco was considerable. It was noticed that the destructive qualities of this *Lasioderma* to capsicum and shumac had been exhibited to the Society in 1847, and that the species had a wide range of food.

Mr. Shepherd exhibited a long series of *Peronea tristana*, Hüb., bred from larvæ found on *Viburnum Lantana*. This species has been known in our collections under the names of *trigonana*, *plumbosana*, *Boscana* and *Logiana*, all of which it was now shown were but varieties of one species. It was also interesting to find that there was not among them any of the varieties of *ferrugana*, W. V. (*gnomana*, Haw.), which is considered on the Continent to be synonymous with *tristana*, Hüb.

Captain Parry exhibited a box of splendid insects from Cayenne.

Mr. Douglas exhibited a fine *Deilephila Celerio*, found by a child in a garden at Folkestone, on 23rd October; also several *Tineidæ*, beaten out of thatch in the neighbourhood of Folkestone: the most worthy of note were *Gelechia vilella*, *Depressaria rotundella*, *D. depressana*, Fab. (*Bluntii*, Curtis), *D. ultimella* and *subpropinquella*.

Mr. Westwood exhibited, from the collection of Mr. Melly, some small *Coleoptera* from Melbourne, South Australia, including ten species of *Pselaphidæ*, one of which appeared to be of the genus *Articerus* of Dalman, said by that author to have been found in amber, and remarkable for having only one joint to the antennæ: the present specimens were found in the centre of nests of black ants, three to six at a time, but not frequently occurring. Mr. Westwood also exhibited, from Mr. Melly's collection, two Goliath beetles from Tropical America: they were two distinct species of the genus *Dicranorhina*, closely resembling each other, and hitherto confounded under the name of *G. micans*, Drury. He read the following description of each:

D. micans, Drury.

D. aureo-viridis, tarsis (articulo basali excepto subaureo), antennis et parte antica capitis nigris; capite carina tenue elevata nigra per totam longitudinem currente, utrinque in parte antica excavata, fossulaque parum profunda nigra utrinque postice ad tuberculum elevatum, marginis interni oculorum extensa; lateribus dente parvo obtuso ante antennas angulisque anticis extus in cornua duo brevia obtusa lateraliter divergentia productis; cornu antico compresso nigro, in dentibus duobus angustioribus et longioribus prodeunti; prothorace postice magis transversè quadrato; tibiarum anticarum spinis minus productis, barbaque articuli ultimi tarsorum anticorum majori, dimidium faciei ejus internæ occupanti, pygidio magis punctato.

Long. corp. ♂ cum cornu clypei unc. $1\frac{5}{6}$.
In Mus. D. Melly.
Habitat —— ?

D. cavifrons, Westw.

D. læte viridis vel aureo-viridis; tarsis, antennis verticeque excavato nigris, capitis lateribus elevatis divergentibus, externe in tuberculum parvum conicum productis anticeque utrinque in cornu porrecto trunco nigro productis; disco excavatione profunda absque carina media longitudinali, clypeo in cornu medio subplano nigro, apice in dentibus duobus brevibus conicis subplanis prodeunti, prothorace postice magis conico; tibiis anticis multi-spinosis spinisque majoribus; barbaque articuli ultimi parva; pygidio fere lævi.

Long. corp. cum cornu clypei unc. $1\frac{3}{4}$—$1\frac{7}{8}$.
In Mus. Melly, Westwood, &c.
Habitat Senegallia.

He also exhibited *Ptinidæ*, found in a barrow 1400 years old, by Albert Way, Esq., of Reigate: they were observed on bones in a covered vase, which again was enclosed in another vase covered with a stone, and a quantity of earth: he inclined to believe that they had not penetrated through these coverings, but had been deposited with the bones. Full details of the discovery of these insects have been published in the Journal of the Archæological Institute for October, 1849.

Mr. Douglas read a continuation of his memoir on the genus *Gelechia* of Zeller.

Mr. Stainton read a paper on the synonymy of *Elachista cæratella* of Zeller.

The President announced that he was instructed to offer as a prize the work of Fischer von Röslerstamm, on *Lepidoptera*, for the best monograph of some genus of *Tortrices*, subject to the following conditions:—1. The prize to be awarded to the writer of the best monograph of some genus of *Tortrices* (the genus not to contain less than twelve species). 2. The monograph to be forwarded to the President of the Entomological Society, not later than April 15th, 1850. 3. The President to appoint three Entomologists (who are not contending for the prize) to act as examiners, and to decide which of the monographs sent in is the best. 4. Their decision to be announced at the May meeting of the Entomological Society.

The Secretary announced that vol. v. part 8, of the Society's Transactions was on the table.

December 3rd, 1849.

G. R. Waterhouse, Esq., President, in the Chair.

Donation.

The following donation was announced, and thanks ordered to be given to the Donor.

The Zoologist for 1849, July to December, by E. Newman, Esq.

Exhibitions, Memoirs, &c.

Mr. Stainton stated, in allusion to the latter portion of the Minutes of the preceding Meeting, it was his own intention to offer the three first volumes of the "Linnæa Entomologica" as a prize for the *second best* monograph of *Tortrices*.

Mr. Stainton exhibited some specimens of *Tinea ferruginella*, Hbn. (*ustella*, Haw., St), taken in a coal mine near Glasgow by Mr. Scott, and remarked that it was not a little singular that though bred in the dark the specimens were very brightly coloured.

Mr. Westwood exhibited a box of exotic *Coleoptera* from the Collection of A. Melly, Esq., containing a further series of Austra-

lian *Pselaphidæ*, a Brazilian species of *Articerus*, and several Australian species of *Cryptodus* and allied genera.

Mr. Westwood also exhibited specimens, in all its stages, of *Baridius trinotus* (*vestitus*, Schönherr), an American species of weevil, about the size of *Calandra granaria*, which had been communicated to him by Mr. Josiah Forster, having been observed by Miss Morris, of Germantown, to attack the potatoes in America to such an extent as to have led to the belief of its being the real cause of the potato disease. The eggs are deposited in the leaf-buds, and the larvæ, as soon as hatched, burrow into the stems, within which they feed, descending to the root and causing the decay of the plant.

Messrs. Westwood, Stephens and Waterhouse said, that of course this insect was not the cause of the potato disease, but the fact was certainly interesting; the identical species *trinotus* not being British, the species of the genus *Baridius* being rare in this country, and none of them frequenting the potato.

Mr. Shepherd exhibited a magnificent series of *Peronea Hastiana*, L., bred from larvæ and pupæ found in sallow leaves, in the neighbourhood of London.

Mr. Saunders read a paper on a species of *Histheses* and *Ipete carissima*, Newm.

The President announced, that a Book had been sent to him, and was on the table, in which any gentleman who wished to become a promoter of the Great Exhibition of the Works of Industry of all Nations, in 1851, was requested to sign his name.

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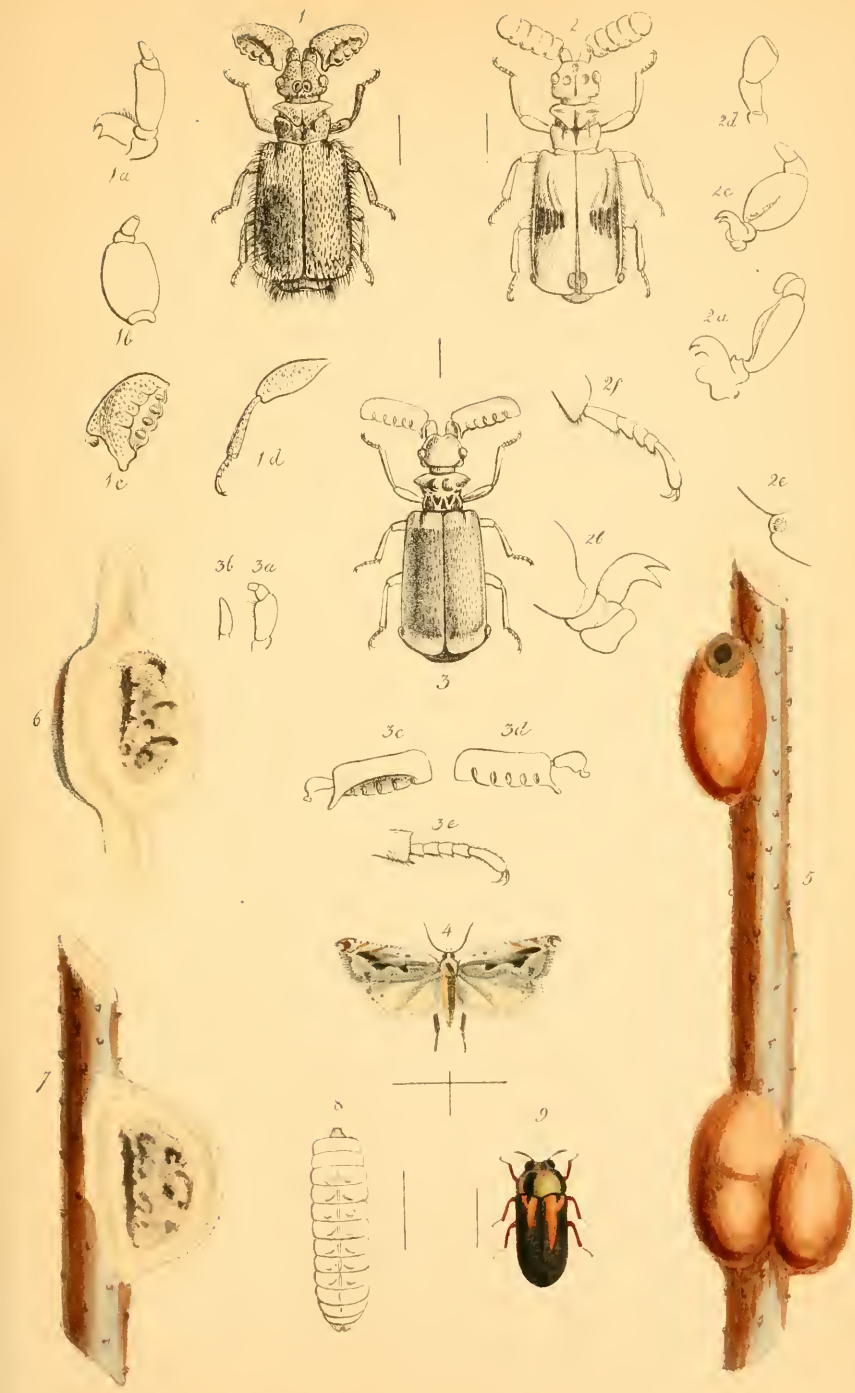
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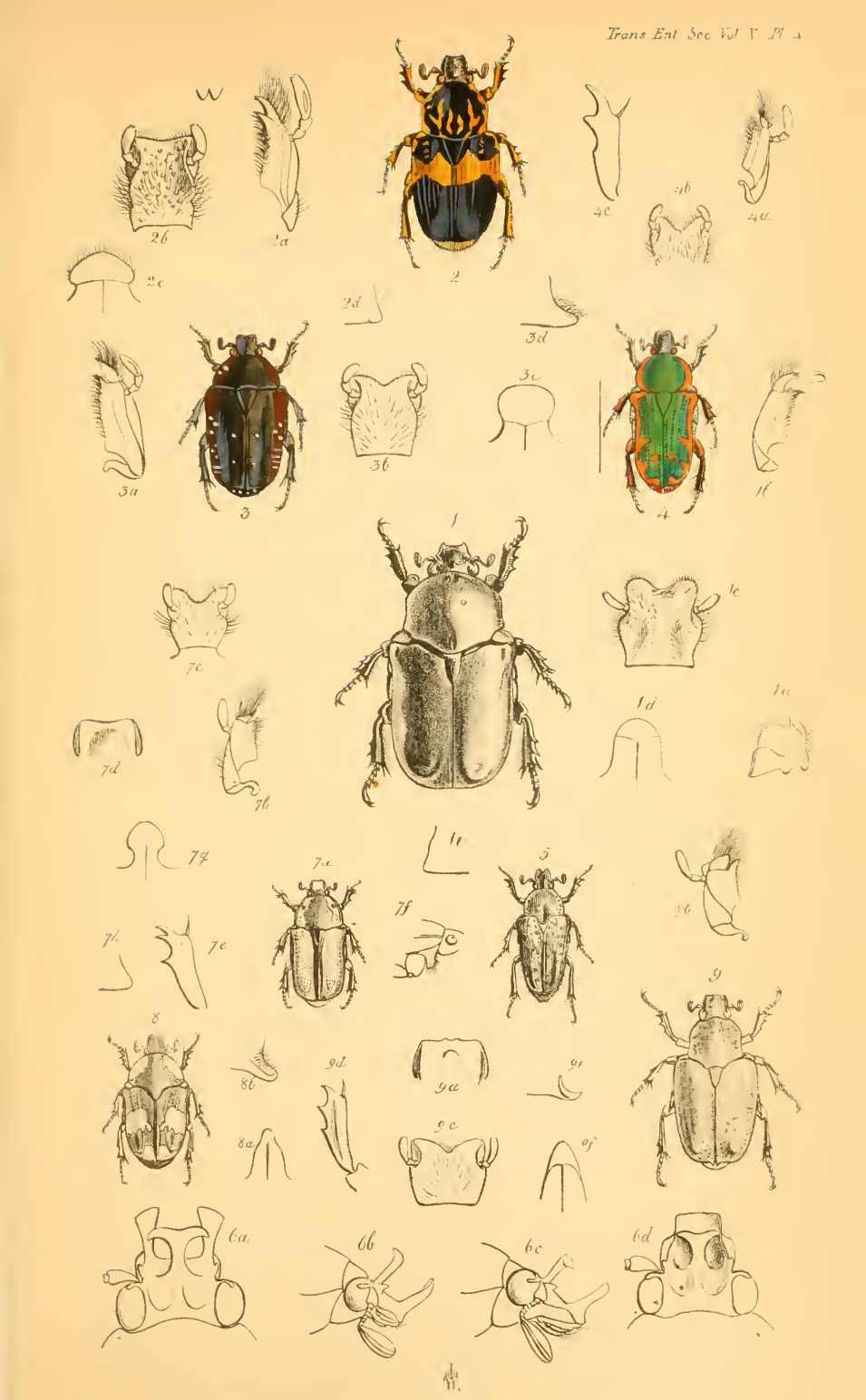
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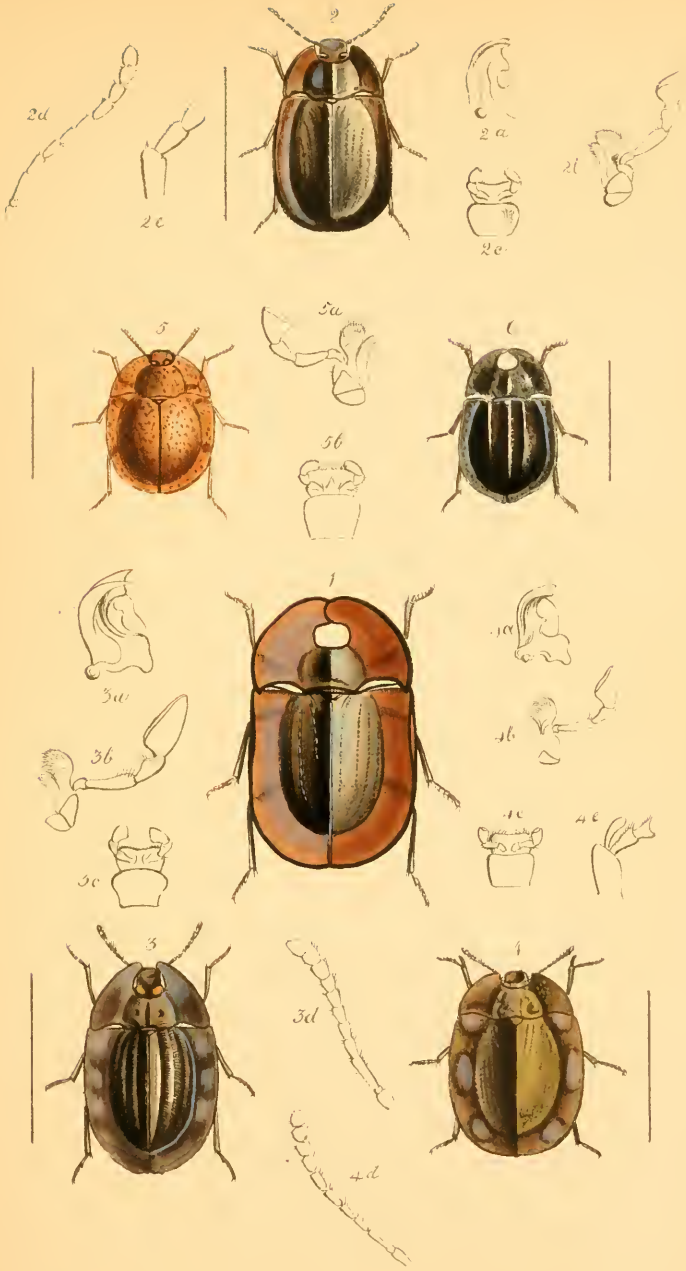
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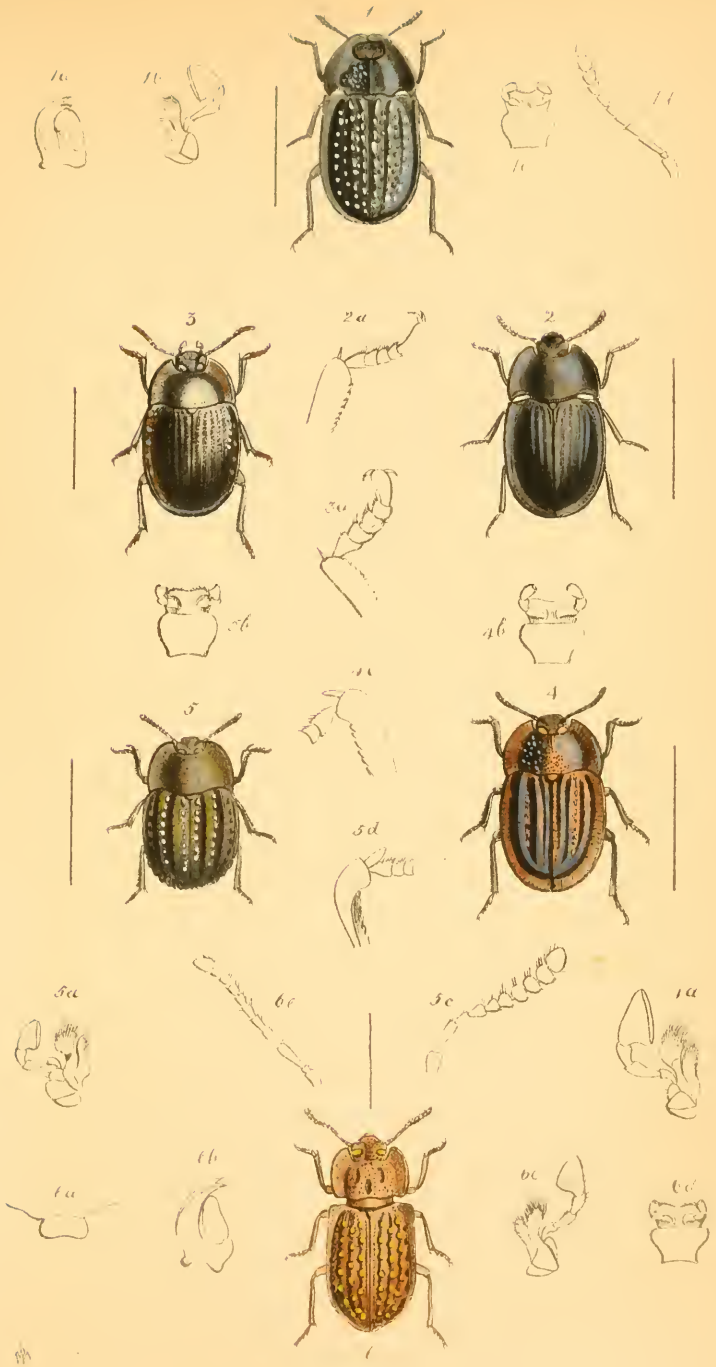
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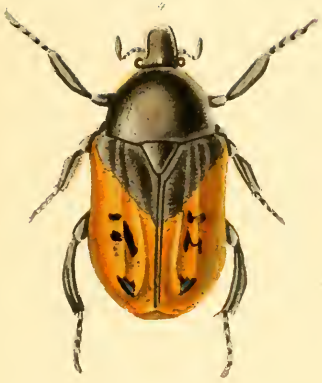

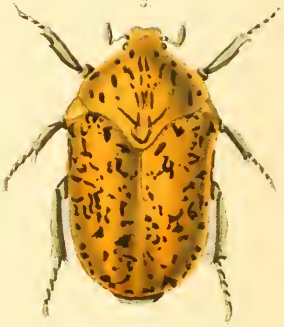

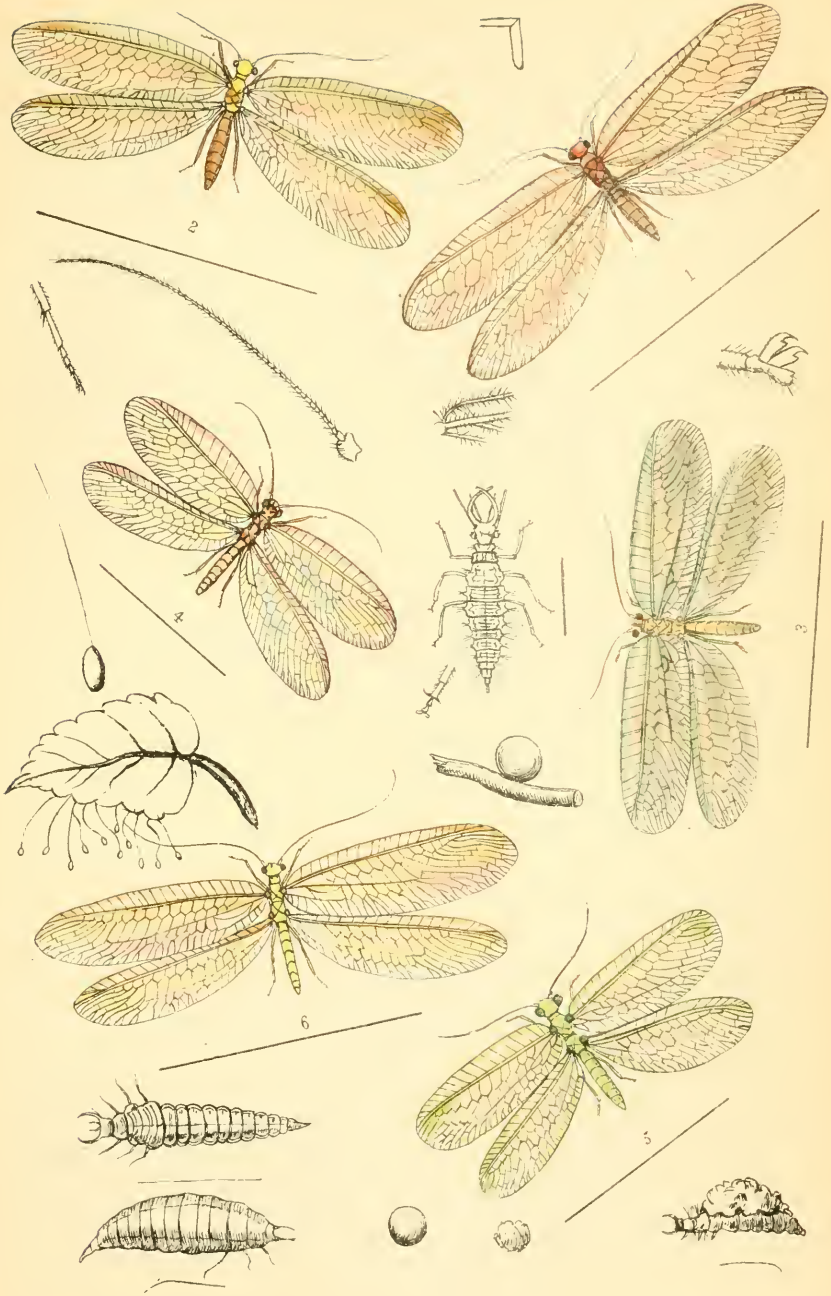

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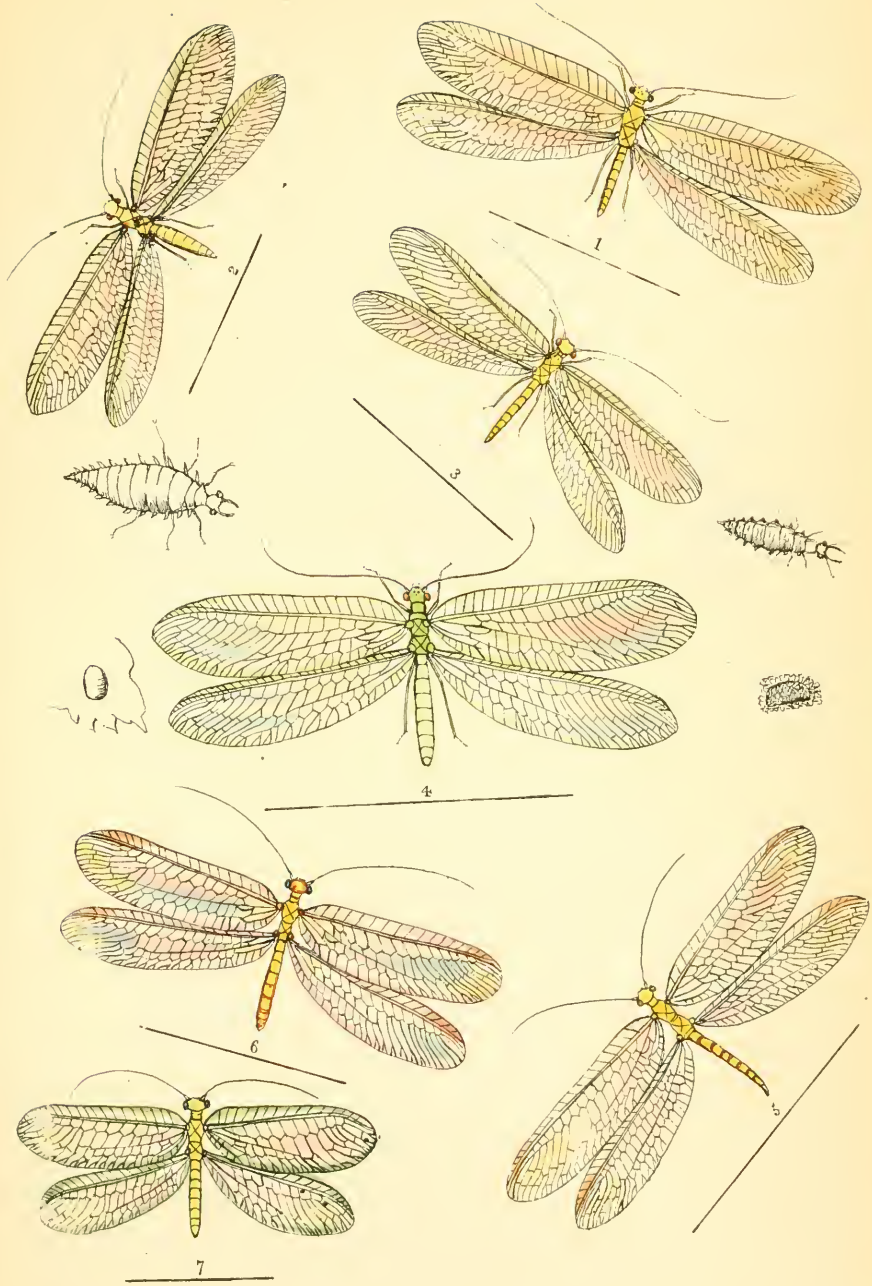
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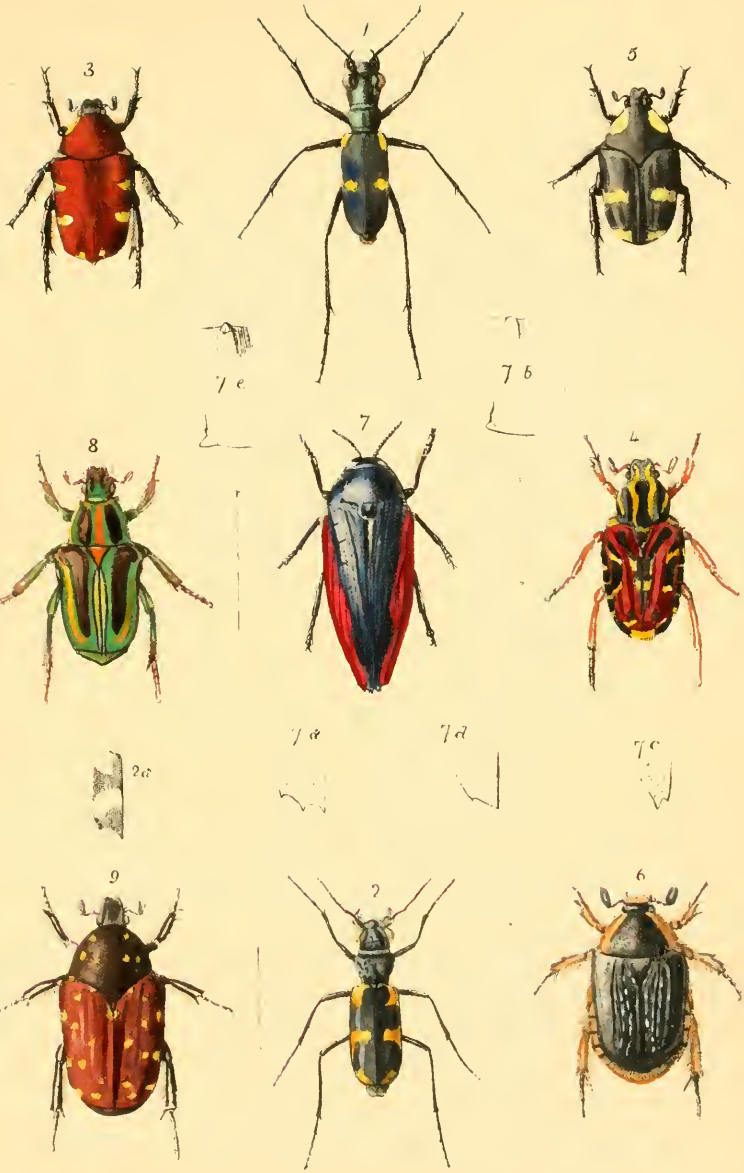
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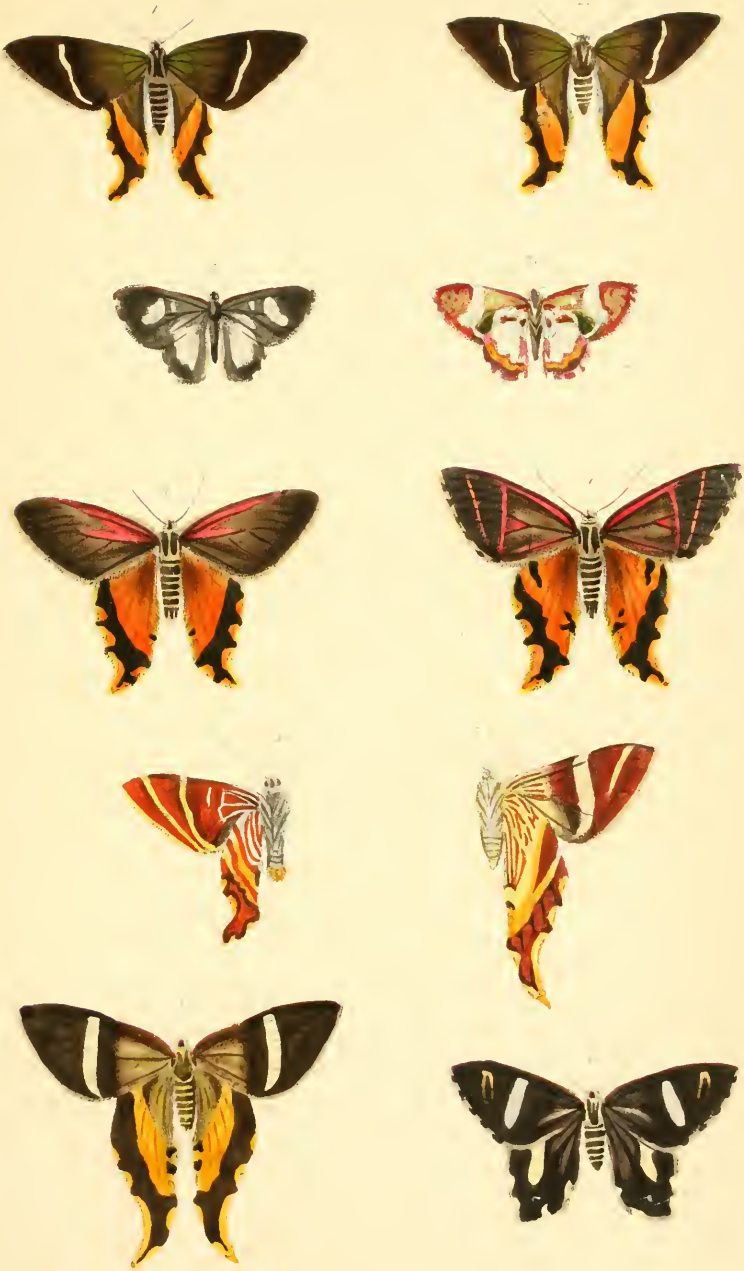

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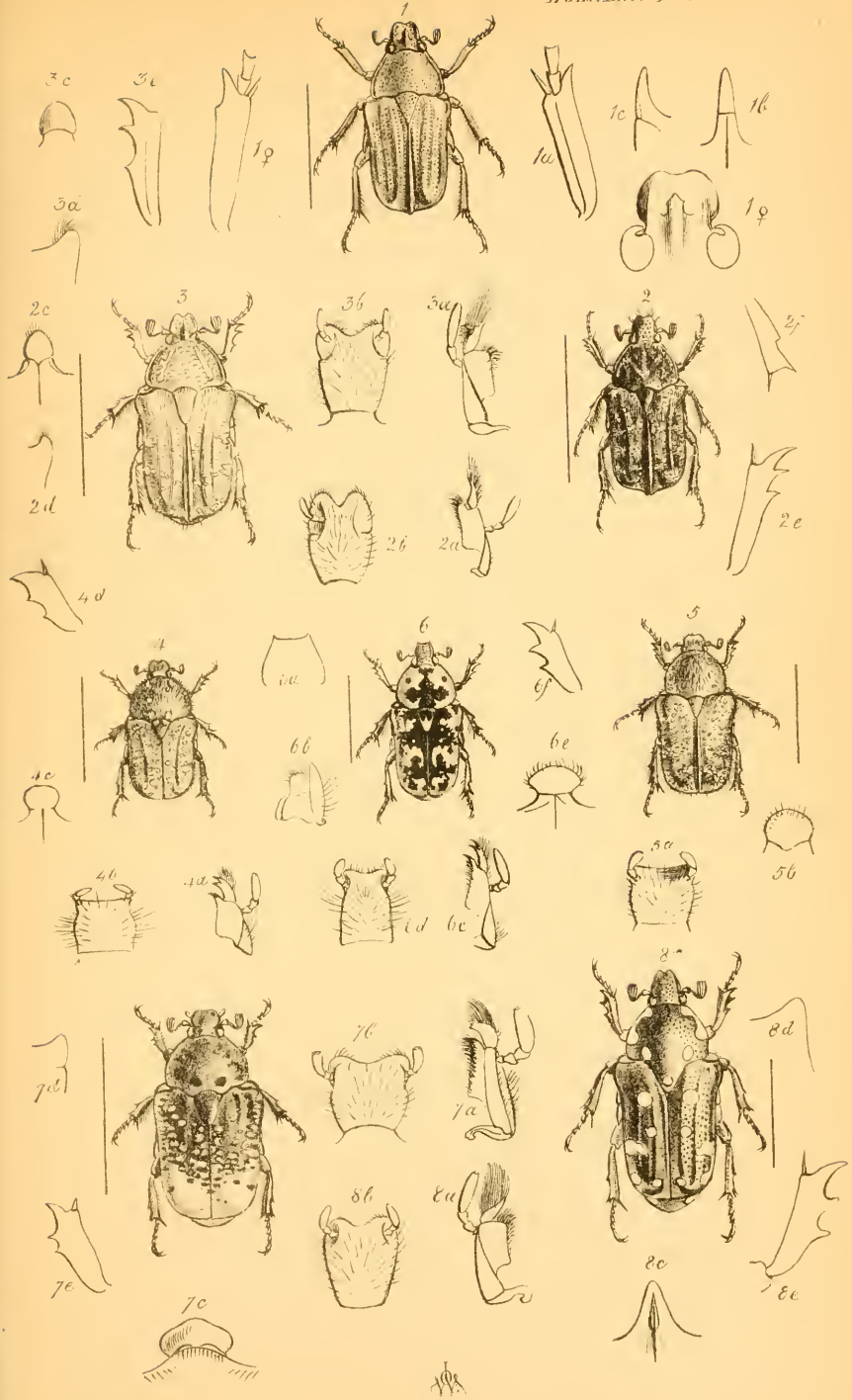
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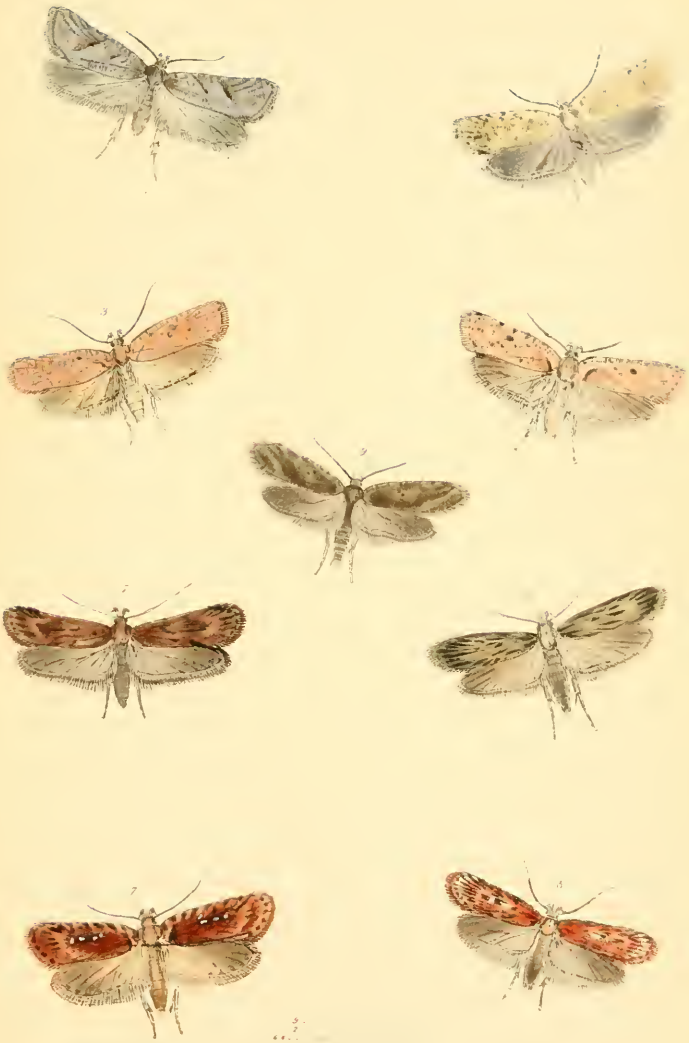

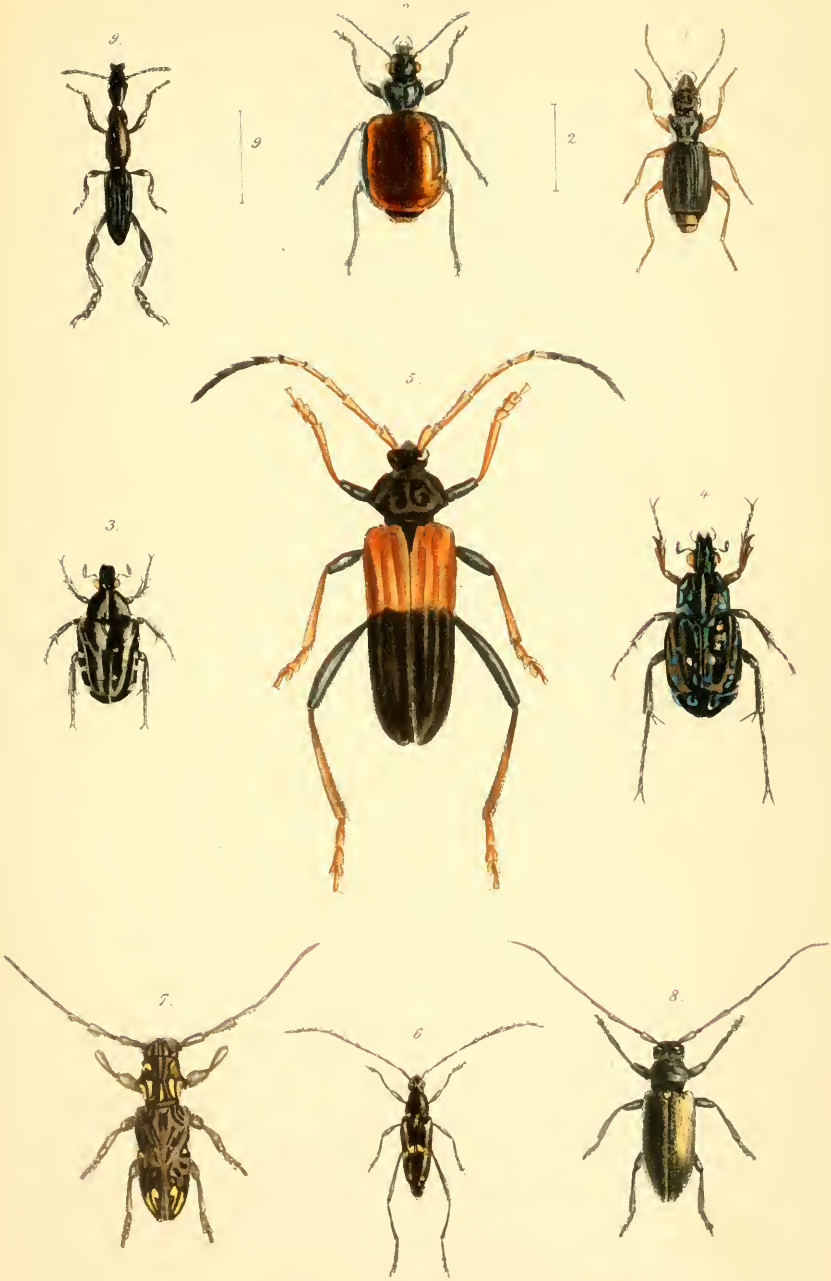

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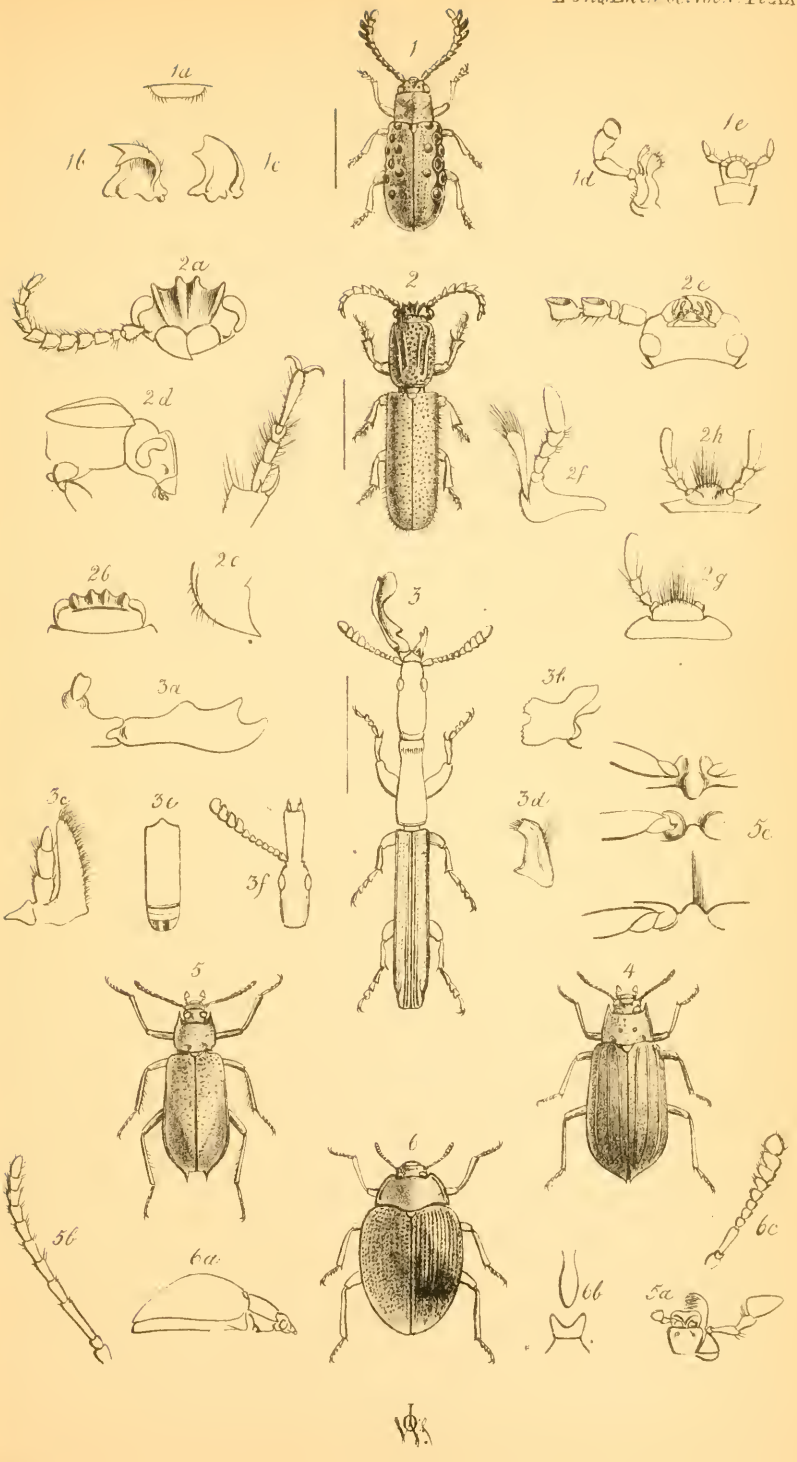
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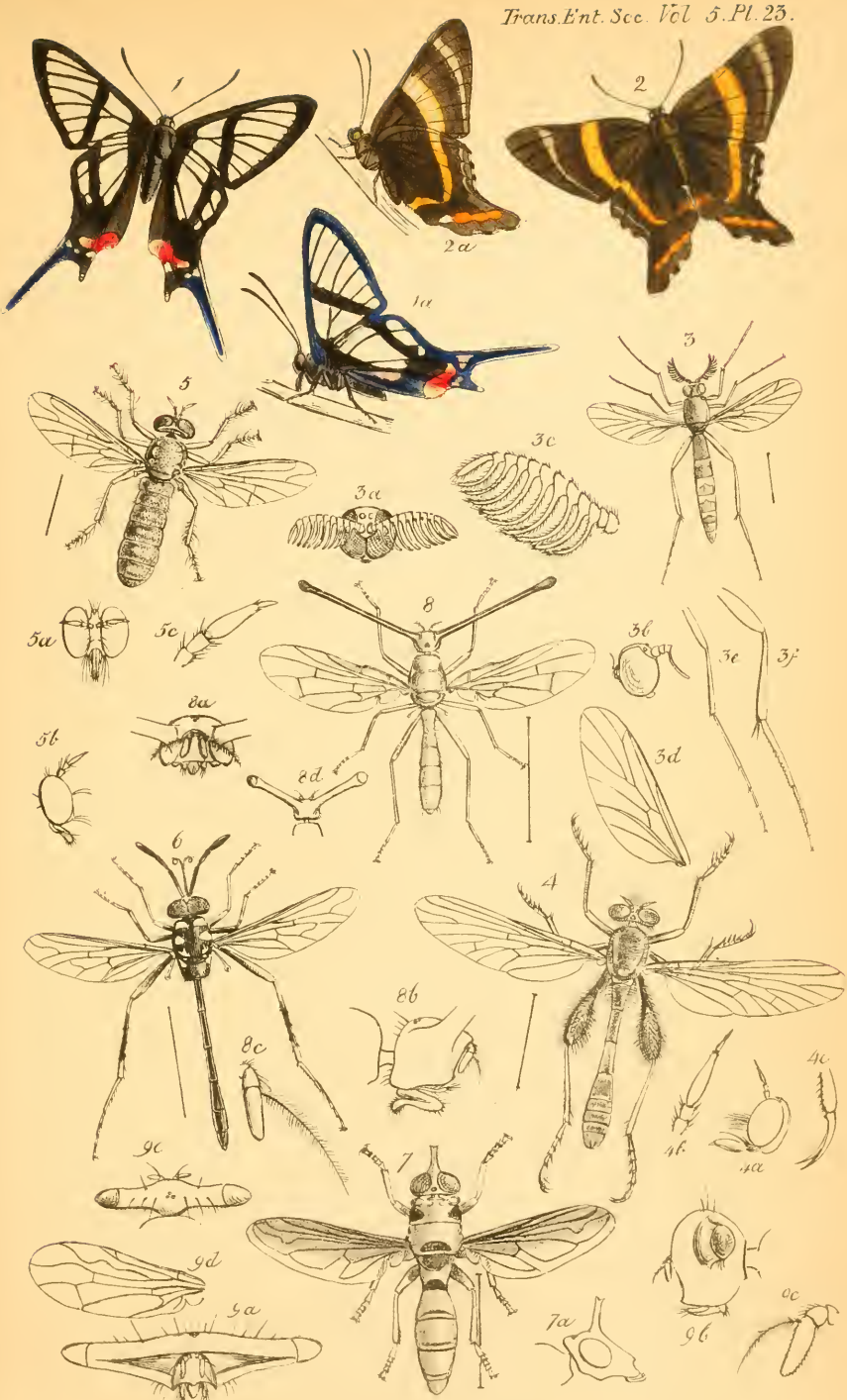
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